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KOFORD, MARY and KOFORD, CARL
FEBRUARY 1951 - NOVEMBER 1952

1- KOFORD, MARY

PANAMA, PERU, CHILE

February 1951 - November 1952

CATALOGUE NOS. 1001 - 1173

SPECIES ACCOUNTS

MAMMALS

Birds

2- KOFORD, CARL

PANAMA, PERU, CHILE

FEBRUARY 1951 - NOVEMBER 1952

CATALOGUE NOS. 909 - 1700

JOURNAL

* SPECIES ACCOUNTS

BIRDS

MAMMALS

* not included in this volume

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KOFORD, MARY

PANAMA, PERU, CHILE

February 1951 - NOVEMBER 1952

CATALOGUE NOS. 1001-1173

SPECIES ACCOUNTS

MAMMALS

CATALOGUE

many Koford
M. Koford
1951

Catalogue
Canal Zone - Peru - Chile - Panama

Feb. 23 Laboratory Buildings, Barro Colorado Id., Canal Zone

- 1001 ♂ ^{testis 4 mm.} *Myotis nigricans* 83-36-9-12
1002 ♂ ^{t. 6 mm.} *Carollia perspicillatum* 70-8-14-20
1003 ♂ ^{t. 6 mm.} *Molossus coibensis* 98-46-8-11
1004 ♀ <sup>1 emb. (aborted)
12 mm. ER</sup> *Myotis nigricans* 83-37-8-13
1005 ♂ ^{t. 4 mm.} " " 83-38-8-12
~~78-34-8-13~~

Feb. 24 Laboratory Bldgs.

- 1006 ♂ ^{testis 5 mm.} *Molossus* 101-38-9-12
1007 ♀ <sup>1 emb.
bulge 16x11</sup> *Myotis nigricans* 81-35-8-13
1008 ♀ <sup>1 emb.
bulge 13x9</sup> " " 88-46-9-12
1009 ♀ <sup>1 emb.
bulge 17x12</sup> " " 87-38-8-12
1010 ♀ ^{" 10x7} " " 85-38-8-12
1011 ♀ ^{embryo aborted} " " 78-33-7-12
1012 ♀ <sup>1 emb.
bulge 14x10</sup> " " 84-37-8-12
1013 ♀ ^{" 16x12} " " 89-41-8-12
1014 ♀ ^{" 13x10} " " 82-36-8-13

Feb. 25 Laboratory Bldgs.

- 1015 ♂ <sup>testis 3 mm.
abdominal</sup> *Saccopteryx bilineata* 67-14-11-17
1016 ♀ <sup>1 emb.
bulge 8x6</sup> *Rhynchoceros Saccopteryx leptura* 61-15-7-12
1017 ♂ ^{t. 2 mm.} *Molossus* 101-39-8-12

Feb. 26 Big Tree, Van Tine trail, Barro Colorado Island, C.Z.

- 1018 ♂ <sup>testis 3 mm.
abdominal</sup> *Saccopteryx bilineata* 75-17-11-15
1019 ♀ " " 75-20-11-16
1020 ♀ <sup>1 emb.
uterine bulge 12x10 mm.</sup> " 75-20-11-16
1021 ♀ ^{" 12x10 mm.} " 76-18-11-16

Feb. 27 Chilibillo Caves, Panama

- 1022 ♀ <sup>lact.
mam. 30x30</sup> *Phyllostomus hastatus* 107-22-22-31
1023 ♀ <sup>aborted
1 emb?</sup> *Carollia* 72-9-13-20
(aborted embryos about 25 mm. ER)



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Feb. 27 Chiriquillo Caves, Panama

1024	♂ ^{testis} 10x7	Carollia	77-8-13-20
1025	♂ skeleton	Phyllostomus	135-18-25-30
1026	♂ ^{testis} 3mm	Lonchophylla robusta	78-9-13-17
1027	♂ ^{testis} 3mm	Chilonycteris rubiginosa	93-19-13-23
1028	♂	Desmodus rotundus	93-0-19-19
1029	♀ ^{lactating!}	Phyllostomus	135-17-23-30
1030	♀ ^{emb.} 15x12	Carollia	78-12-13-18
1031	♀ ["] 25x15	"	78-10-13-20
1032	♀ aborted	"	70-7-13-18
1033	♂ ^{testis} 8x6	"	78-9-15-20
1034	♀ ^{emb.} 12x8 + ^{bulge} 28x20	"	75-8-14-20
1035	♀ ^{skeleton} aborted	"	77-9-12-19

April 12 Hacienda Pairumani, 24 mi. S llave, Dept. Puno, Peru ^{13000 ft.}

1036	♀ im	Akodon boliviensis	142-61-21-14 18 gm.
April 13 1037	♂ ^{t.} 8x5	" jelskii pulcherrimus	186-82-26-20 40 gm.
1038	♂ ^{t.} 14x8	" boliviensis	170-68-18-15 35 gm.

April 14

1039	♂ ^{t.} 12x7	" Carollia ^{barbepschii}	177-74-22-15 35 gm.
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April 14 1040	♂ ^{t.} 10x7	Phyllotis pictus	199-85-25-20 47 gm.
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at base of rock wall in field of bunch grass

1041	♂ ^{t.} 9x6	Phyllotis oscilans	215-110-25-22 32 gm.
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at base of cliff under Ribes-like bush

April 16 1042	♂ ^{t.} 10x6	Phyllotis oscilans	249-120-26-22 57 gm.
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under rock wall on bunch grass slope

April 18 Quellacota, 35 mi. S llave, Dept. Puno, Peru, 13000 ft.

1043	♀	Cavia muschikowii	240-8-43-25 385 gm.
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nipple 7 mm. saved ovaries + part of rt. uterus
2 emb. - 1 st., 1? 40 mm CR + another 10 mm, bulge rt.

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April 18 Quellacota, 35 mi S Ilave, Dept. Puno, Peru 13,000'
skull only [♀] ^(Baker)
1044 ♂_{20x15} *Cavia musteloides* 420 gm.
rt. covered

discarded: 2 ♀^{imm.} wt. 170 gm. + 235 gm.
^{ovary} t. 15x10 mm. t. 23x11 mm. t. 20x15 mm.
3 ♂♂ wt. 395 gm., 385 gm., 365 gm.

1045 ♂_{20x15} *Ctenomys peruanus* 330-95-40-12 650 gm.

April 20 13000 ft., Hacienda Pairumani, 24 mi. S Ilave, Dept. Puno, Peru

1046 ♀ *Phyllotis osilae* 236-123-25-24 48 gm.
nipple 3 mm., vagina closed, mammary tissue, repr. tract saved
6 ft. ^{above} base of cliff under bush; dry steep slope

April 20 2 mi. W Santo Rosa, 10 mi. W Mazocruz, Dept. Puno, Peru, 14,000 ft.

1047 ♂_{12x7} *Phyllotis darwini* 214-105-25-24 44 gm.

under *Polylepis* bush at foot cliff

1048 ♂_{15x5} *Akodon jelskii pulcherrimus* 198-88-27-20 47 gm.
sand, rocks, bunch grass 6 ft. from stream

1049 ♂_{15x5} *Akodon boliviensis* 178-72-21-15 33 gm.
bunch grass 4 ft. from stream

May 1 Livina, 21 mi. NE Tarata, 15300', Dept. Tacna, Peru

1050 ♀^{no milk, 1 mm. diam.} *Ctenomys opimus* 287-90-41-9 250 gm.

May 27 8 mi. SSW Limbani, 15000', Dept. Puno, Peru

1051 ♂ test. 13x7 *Phyllotis darwini*? 257-132-29-29 75 gm.

June 8

1052 ♀ *Akodon jelskii erreni* 188-82-25-22 36 gm.
CK measurements
vag. imp., nip. 1½ x 1½, repr. tract saved
base wall, stone corral

July 10

1053 ♀ *Phyllotis pictus* ^{shell lost} 217-89-26-21 66 gm.
nipple 1 mm. wide, 2 mm. high, vagina open, repr. tract saved - rt. uterus severed from vagina
midday under *Senecio* by rock wall

July 31 5 mi. SSW Limbani, 13800', Dept. Puno

1054 ♂_{15x5} *Neotomys* ^{shell lost} 190-75-23-17 50 gm.
m. 3 mm. x 1 mm. mammary tiss.

1055 ♀ *Chinchilla* ^{shell gone} 275-109-36-36 137 gm.
vag. part
rt. covered (left ut. att. 6 vag.)

skull gone

skull gone

"

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- July 31 6 mi. SSW Limbani, 14000', Dept. Puno
1056 ♂^{t.} *Phyllotis pictus* ^{shell lost} 213-92-25-22 55 gm.
- Aug 1 5 mi. SSW Limbani, 13800', Dept. Puno
1057 ♀ ^{vag. imperf. nip. 2 mm., used uterus} *Akodon jelskii creus* ^{shell lost} 190-87-25-21 33 gm.
- 1058 ♂^{t. 3x2} *Oryzomys paranaensis nigricans* ^{shell lost} 217-96-26-16 38 gm.
- Sept. 12 8 mi. SSW Limbani, 15000', Dept. Puno
1059 ♂ ^{t. 8x5 saved} *Nestomys* 197-78-24-19 56 gm.
- Sept. 13
1060 ♂ ^{t. 8x5 left saved} *Phyllotis pictus* 204-90-26-22 52 gm.
- Sept. 22 14500'
1061 ♂ ^{left testis saved t. 8x7} *Chinchillula* 288-112-35-40 157 gm.
- 1062 ♂ ^{left testis saved t. 10x6} *Punomys* 200-65-27-23 62 gm.
- Sept. 24
1063 ♀ ^{vag. perf. nip. 1 mm. prim. last testis} *Chinchillula* ^{some teeth} 265-108-35-38 112 gm.
- Sept. 24 15000'
1064 ♀ ^{vag. imperf. nip. 2 mm.} *Phyllotis darwini* 241-129-27-29 43 gm.
- Sept. 26
1065 ♂ ^{test. 8x5} *Phyllotis sublimus* 163-61-23-23 40 gm.
- Sept. 28 5 mi. SSW Limbani, 13800', Dept. Puno
1066 ♀ ^{vag. perf. nip. 2x1 molting} *Chinchillula* 240-93-33-37 102 gm.
- Sept. 29
1067 ♀ ^{1 swelling 4 mm. diam. imp. 2 mm. n. last testis molting} *Chinchillula* 256-104-33-37 108 gm.
- 1068 ♀ ^{2 swellings 3 mm. diam. perf. n. 1 mm. last testis molting} *Phyllotis sublimus* 167-62-22-25 37 gm.
- 1069 ♂ ^{t. 10x6} *Phyllotis pictus* 235-109-28-25 70 gm.
- Oct. 6 8 mi SSW Limbani, 14500', ^{dead} See C.B. Koford species acct.
- 1070 ♂ ^{t. 7x7} *Chinchillula* 267-106-34-38 132 gm.
^{on shoulder}
coll. Oct. 2 120 gm.
- 1071 ♀ ^{2 emb.} *Chinchillula* 305-117-33-37 140 gm.
coll. Oct 2, dead Oct. 15
- back
species acct.
skeleton

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Oct. 17 4 mi. SSW Limbani, 13000', Dpto. Puno

~~1072 ♂ t 5x5 Akodon jelskii 182-77-27-20 45 gm.~~

~~1073 ♂ t 9x7 Phyllotis pictus 212-92-26-22 53 gm.~~

see
CK of dict. 1072 ♀ 3 emb. Akodon jelskii inamburii 197-85-26-20 47 gm.

Oct. 18 4 mi. SSW Limbani, 13000'

" 1073 ♂ t. 9x6 Phyllotis darwini 263-140-29-26 50 gm.

Oct. 19 4 mi. SSW Limbani, 13000'

1074 ♀ ^{reg. imperf.}
^{imp. 1 mm}
^{ut. horns slender} Oryzomys longicaudatus 197-114-26-17 14 gm.

Oct. 20 damp ground, grass, rocks, shrubs

" ~~1075~~ ♂ t 9x6 Phyllotis pictus 226-98-26-21 44 gm.

Oct. 21

1076 ♀ ^{reg. imperf.}
^{imp. 1 mm}
^{ut. slender no ovals} Oryzomys ^{longicaudatus}
^{small}
^{white belly} 201-120-27-16 29 gm.
big shrubs & rocks

" 1077 ♂ t. 10x6 Akodon boliviensis ^{subfuscus} 165-73-21-15 17 gm.

Oct. 20 Ocanegue, 10± mi. N Limbani, 7000± ft., Dpto. Puno

1078 ♂ t 3x2 Myotis 94-42-8-14 6 gm.

Oct. 21

1079 ♂ t 9x6 Lenoxus apicalis 317-160-33-26 90 gm.

1080 ♀ ^{reg. imperf.}
^{imp. 1 mm} ^{ut. slightly vascular but no ovals} Oryzomys ^{longicaudatus} 323-175-34-23 72 gm.

Oct. 23 1 mi. S Limbani, 11500', Dpto. Puno

1081 ♀ ^{m. 1 1/2 mm}
^{reg. imperf.}
^{ut. slightly vascular but no ovals} Akodon boliviensis ^{subfuscus} 166-69-20-15 22 gm.

1082 ♂ t 5x3 Oryzomys ^{longicaudatus}
^{small}
^{white belly} 196-115-24-15 20 gm.

" 1083 ♂ t 9x7 Oxymycterus ^{subfuscus} 222-89-27-18 50 gm.

" 1084 ♀ ^{m. 2 1/2 mm}
^{reg. imperf.}
^{ut. slightly vascular but no ovals} Neotomys 196-77-23-19 59 gm.

1085 ♂ t 8x8 Phyllotis pictus 238-105-27-23 82 gm.

Oct. 25 3 mi. N Limbani, 9500', Dpto. Puno

1086 ♂ t 9x7 Galesticorpus 225-118-24-14 39 gm.

1087 ♂ t 8x5 Oryzomys longicaudatus 226-129-25-17 26 gm.



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see
CK notes

Oct. 25 3 mi. N Limbani, 9500', Dpto. Puno

1088 ♀ ^{lactating} Akodon boliviensis sulfureum 173-76-20-15 26 gm.

1089 ♂ ^{t.} 9x6 Akodon boliviensis sulfureum 187-85-23-16 29 gm.

Oct. 26

1090 ♂ ^{t.} 6x4 ~~Thomomys daphne~~ ^{Oryzomys} med. (dark) 220-127-25-17 26 gm.

1091 ♀ ^{imp. imperf. nup. minute} ~~Thomomys daphne~~ ^{tail short} 226-133-24-17 22 gm.

1092 ♂ ^{t.} 9x6 Akodon boliviensis sulfureum 177-70-22-16 32 gm.

Oct. 27

1093 ♂ ^{t.} 8x6 ~~Thomomys daphne~~ ^{Oryzomys} med. (dark) 245-145-28-19 29 gm.

1094 ♂ ^{t.} 4x4 ~~Oryzomys~~ ^{Oryzomys} inca 230-130-25-16 29 gm.

~~1095~~ 4 mi. N Limbani, 8800', Dpto. Puno,

1095 ♂ ^{t.} 9x5 ~~Microtus~~ 199-94-24-16 27 gm.

1096 ♀ ^{vag. perf. nup. 3 mm. no lact. ties.} ~~Oryzomys~~ ^{Oryzomys} parvus nigripes 213-87-25-18 40 gm.

1097 ♂ ^{t.} 17x11 ~~Thomomys aureus~~ ^{Oryzomys} large 370-220-38-23 101 gm.

Oct. 28 3 mi. N Limbani, 9500', Dpto. Puno

1098 ♀ ^{imp. imperf. nup. 2 mm. no lact. ties.} ~~Oryzomys~~ ^{Thomomys daphne} 247-148-25-18 30 gm.

1099 ♀ ^{imp. imperf. nup. 2 mm. no lact. ties.} ~~Oryzomys~~ ^{Oryzomys} longicaudatus 223-130-25-17 22 gm.

Nov. 12 Huaylarco, 52 mi. ENE Arequipa, 15000', Dpto. Arequipa, Perú

1100 ♀ ^{perf. nup. 1 mm. no scars} ~~Chinchilla~~ ^{Chinchilla} back molting 254-97-31-34 115 gm.

Dec. 13 6 mi. SSE Imata, 14500', Dpto. Arequipa

1101 ♀ ^{lact.} Akodon jelskii pulcherrimus 177-78-25-21 35 gm.

1102 ♂ ^{t.} 12x8 Phyllotis darwini 245-125-27-28 50 gm.

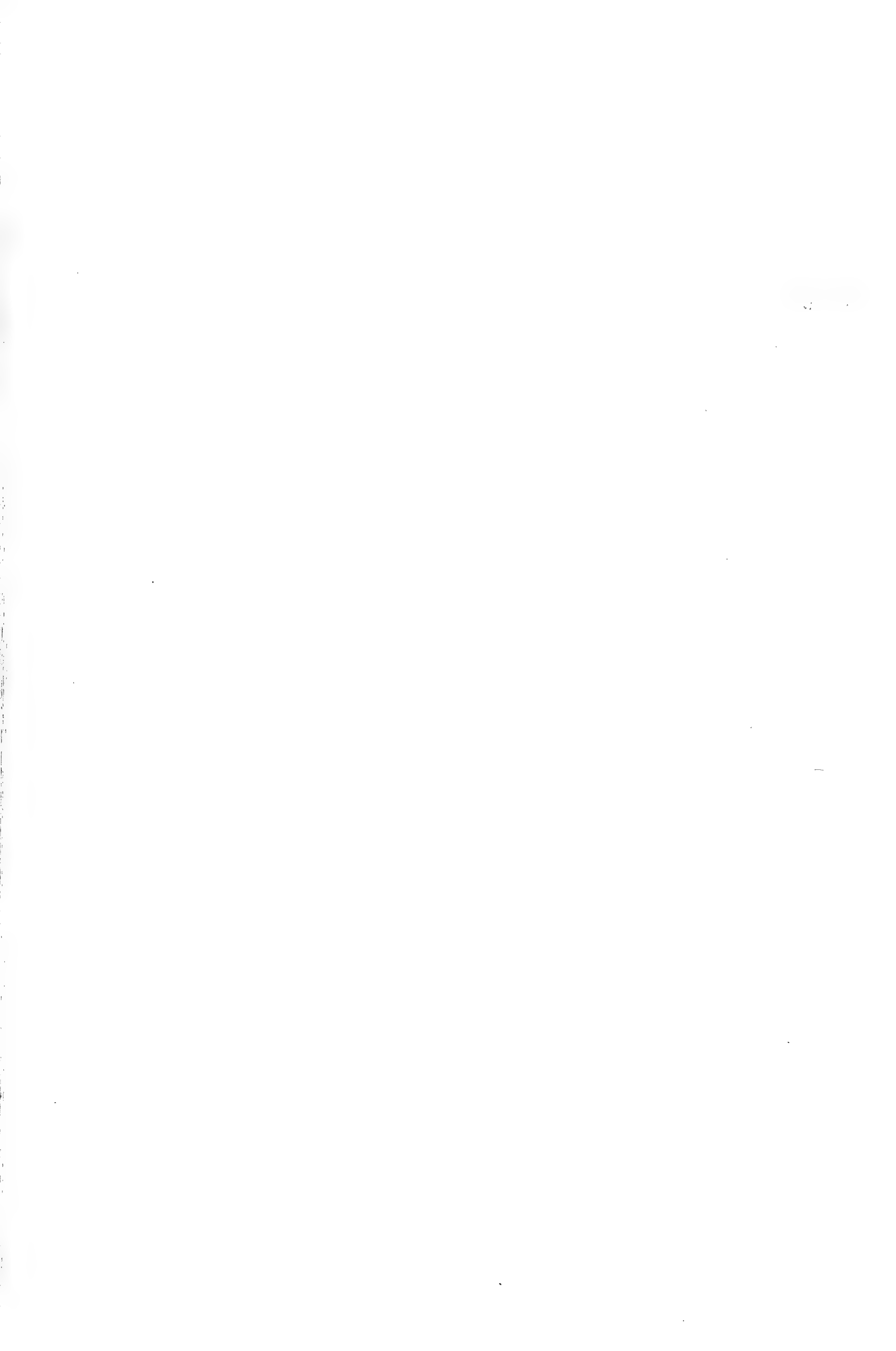
Dec. 14

1103 ♂ ^{t.} 7x5 abd. Akodon jelskii pulcherrimus 180-78-27-20 37 gm.

1104 ♂ ^{t.} 10x6 scrotal Phyllotis sublimis 170-50-23-22 54 gm.

Dec. 16 Salinas, 14200', 22 mi. E Arequipa

1105 ♂ ^{t.} Akodon jelskii pulcherrimus 191-88-26-21 35 gm.



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Jan. 1 Huaylarco, 15300', 55 mi. ENE Arequipa
testis abdominal ion. scrotum full of muscle
1106 ♂ saved Phyllotis boliviensis 225-94-29-28 72 gm.

Jan. 2
1107 ♀ lact. Phyllotis boliviensis 221-91-28-29 68 gm.
1108 ♀ lact. " 207-86-29-30 67 gm.
rep. tract saved

Jan. 5 Huaylarco, 15000', 52 mi. ENE Arequipa
t. 10x7
1109 ♂ scrotal Phyllotis sublimis 156-46-21-19 40 gm.
1110 ♀ " " 156-50-23-20 32 gm.

March 31 Huaylarco, 15300', 55 mi. ENE Arequipa
tract saved
1111 ♀ Panomys. 203-61-29-23 92 gm.
vagina open, nipples 3 mm., no mammary tissue,
uterine swellings 2 rt., 1 left, with vascular walls

April 1
" 1112 ♂ x6 Akodon andinus 133-50-21-15 18 gm.
t. abd.

March 31

1113 ♀ Akodon jelskii pulcherrimus 170-70-23-19 32 gm.
[May 7 - next page]
May 12 25 mi. SW Chalhuanca, 14500', Dpto. Apurimac, Peru
1114 ♀ in Akodon jelskii monstrosus 150-73-23-17 16 gm.
1115 ♂ 1/2 imm. " " 147-64-23-17 16 gm.

+ 2 more immatures (A. K. Pearson cat.) in rocks + Senecio

1116 ♂ 3 imm. Chinchillula 260-114-33-36 132 gm.
220-97 T. 3 mm. 4 mm.
+ 73 gm. ♂ in same place in rocks with Senecio cuttings

May 13
1117 ♂ Phyllotis sublimis pictus 179-63-24-22 49 gm.
T. 11x7 rem. test. 30 mm.

May 14 21 mi. ENE Puquio, 14500', Dpto. Ayacucho, Peru
1118 ♀ Chinchillula 287-116-32-37 150 gm.
nip. 3 mm., vag. barely imperf., uterus + ovaries not enlarged

May 16 11 mi. NW Puquio, 11500', Dpto. Ayacucho
1119 ♂ 1/3 imm. Oryzomys? 203-118-22-15 16 gm.
T. 1/3 imm.

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May 16 11 mi. NW Puquio, 11500', Dpto. Ayacucho, Peru

1120 ♀ lect. *Phyllotis pictus* 180-82-19-18 30 gm.

May 7th [sic] 6 mi. N Paucartambo, 10400', Dpto. Cuzco

1121 ♂^{t.}_{2x} *Myotis chloensis* 93-48-10-14

May 30 2 mi. E Chihuata, 10,000 ft., Dpto. Arequipa, Peru

1122 ♂^{t. 13x9}_{ser. 35 mm.} *Phyllotis* sp. (big-toothed) 265-122-29-25 88 gm.

June 6 Hcda. Umayo, 15 mi. S Juliaca, Dpto. Puno, Peru

1123 ♀ lect. *Phyllotis osilae*? 207-108-24-22 31 gm.

1124 ♂^{t.}_{4x2} " " 220-112-25-22 37 gm.

discarded 2 ♀♀ im. of this kind (tails dark with short hair, ears 21 mm.) 24 gm. & 26 gm.

1125 ♀^{nip 2 mm.}_{sub.} *Phyllotis darwini*? 208-103-25-24 36 gm.

1126 ♂^{t.}_{3x2} " " 212-109-27-24 36 gm.

1127 ♂^{t.}_{9x3} " " 230-112-27-27 48 gm.

see
CK species
accs.

discarded of this kind (long hair on tail, large ears):

♀ im 25 gm. 180-85-25-23

♂^{t.}_{3x2} 28 gm. 195-97-26-26

♂^{t.}_{3x2} 28 gm. 195-96-26-25

♀ im 29 gm. 206-105-26-26

June 9 discarded *P. darwini* ♂^{t.}_{4x2} 202-104-27-25 36 gm.

" *P. osilae* ♂^{t.}_{3x2} 213-111-27-22 30 gm.

" " " ♀ im 207-113-26-21 28 gm.

" " " ♂^{t.}_{4x2} 209-109-26-22 28 gm.

" " " ♂^{t.}_{3x2} 201-107-25-21 28 gm.

" " " ♂^{t.}_{3x2} 183-92-24-20 22 gm.

" " " ♀ im 190-101-24-22 21 gm.

1128 ♂^{t.}_{4x2} *P. osilae* 219-113-26-23 33 gm.

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June 16

1129

3 mi. NE Asapa, 12600', Dpto. Puno, Peru

♀ parous
7 mo. emb.

Phyllotis darwini 224 - 112 - 26 - 27 38 gm.

1130

♂ 2x1

Phyllotis osilae 233 - 123 - 27 - 24 39 gm.

June 18

1131

♂ 3x1

Phyllotis osilae 237 - 125 - 26 - 23 46 gm.

June 21 Hedo. Calacala, 7 mi. SW Putina, 13000', Dpto. Puno

1132 ♂ 2x1 like CK 1045 *Neotoma*? 139 - 67 - 19 - 18 13 gm.

June 22

1133

♀ 2 emb. etc. horn

Akodon jelskii pulcherrimus 178 - 77 - 24 - 20 36 gm.

June 24

1134

♂ 8x5

Akodon amoenus 115 - 15 - 21 - 14 27 gm.

discarded 4 *A. boliviensis*: 2 ♀ 8 gm., 9 gm. 2 ♂ 16 gm. T. 6x3

P. osilae ♂ 34 gm. T. 3x2

Nothura ♂ T. 3 mm. 190 gm.

skeleton T.

1135

♂ 7 mm

Nothoprocta ornata 350 gm.

June 27

1136

T. scrotal 13x8 mm.

Akodon amoenus 175 - 71 - 21 - 14 41 gm.

1137

♀ lact.

Akodon boliviensis 174 - 68 - 21 - 15 33 gm.

Aug. 18

3 mi. SW

T. 11x8

sem. ves. 35 mm.

1138

♂

Phyllotis darwini

242 - 119 - 29 - 26

55 gm.

Aug. 23 30 mi. S 3 mi. W Masocruz, 14300', Dpto. Puno, Peru

1139

♂ 5x3

Akodon jelskii

197 - 86 - 28 - 22

41 gm.

1140

♂ 5x4

"

178 - 78 - 26 - 20

40 gm.

discarded 2 ♀♀ im. 34 gm., 26 gm. colored like 1140

(dark color, light tail (but no white tip), ear patch separated dark)

Sept. 20

Caritaya, 12000', 75 mi. SE Arica, Prov. Tarapaca, Chile

T. 11x8

sem. ves. 30 mm.

1141

♂

Phyllotis darwini

215 - 111 - 27 - 27

42 gm.

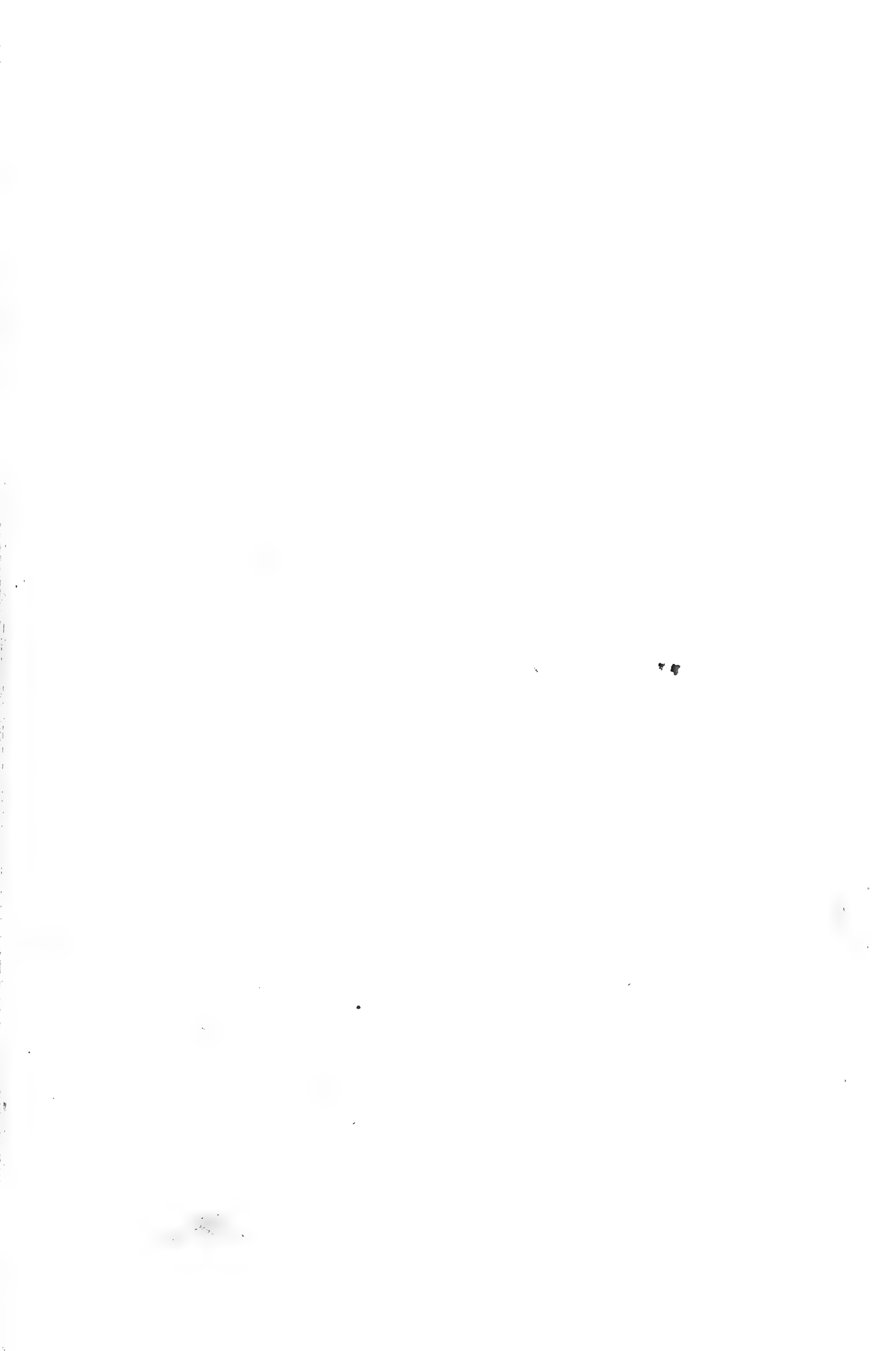
1142

♂ 10x7

"

237 - 120 - 25 - 25

52 gm.



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see C. Koford species accounts

Sept. 22 Caritaya, 12000', 75 mi. SE Arica, Prov. Tarapaca, Chile
1143 ^{o. imp. 1 mm. dark} ^{reg.} *Phyllotis darwini* 231-120-26-25 41 gm.
^{closed, uterus 1 mm. wide no scars, ov. small}

Oct. 2 Ojos San Pedro, 12500', 55 mi. NE Calama,
Prov. Antofagasta, Chile

1144 ^{T. 10x6} ^{o. as seen} *Phyllotis darwini* 224-100-28-27 56 gm.

1145 ^{non-br.} ^{im.?} *Phyllotis* 217-113-28-26 32 gm.

Oct. 8 Toconce, 14000', 60 mi. ENE Calama, Prov. Antofagasta

1146 ^{o. 1x1, vag. imperf., lactal tiss., embryos 2 rt, 2 l.: bulge 4x4,} *Phyllotis darwini* 215-105-26-25 48 gm.
^{rt. ov. with 2 large (2 mm.) yellow corpora + 2 small (1 mm.) pink,}

1147 ^{T. 10x6, seen Oct 25} *Phyllotis darwini* 248-130-25-25 43 gm.
^{left ov. 3 or 4 small pink}

Oct. 20

1148 ^{1 emb. rt. 40 mm. CR} *Ctenomys fulvus* 295-88-38-8 266 gm.

Oct. 21 discarded *Akodon andinus* ^{T. 8x5} ♂ 138-56 ¹²⁰⁻⁵⁰ ♀♀ 113-47 im.

Phyllotis ♂ 225-110-26-22 T. 10x6

♀ 210-102-24-23 parous

♂ 229-113-26-24 T. 10x6

Phyllotis sublimis ^{non-br. im?} ♀ 154-46 ^{T. 10x7} ♂ 168-52

Oct. 22 - died after 2 weeks' captivity

1149 ^{non-br.} ^{im.} *Ctenomys fulvus* 290-90-38-8 170 gm.

Nov. 8 kept alive since Oct. 19

1150 ^{skeleton} ^{T. 10x5} *Abacomaximera* 280-79-29-29

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Nov. 13	under cut palm leaves (1151-1153)	Summit Experimental Gardens,	Canal Zone
1151	♂ 5mm. ^{T.}	<i>Uroderma bilobatum</i>	59-0-12-16 16 gr.
1152	♂ 5 ^{T.}	" "	60-0-12-17 16 gr.
1153	♂ 7.5 ^{skeleton}	" "	59-0-11-16 15 gr.
Nov. 14	Juan Mina Station,		Canal Zone
1154	♀ ^{no. in.}	<i>Corollia perispicillata</i>	65-8-15-20 20 gr.
1155	♂ 6mm. ^{T.}	" "	69-8-14-19 20 gr.
1156	♀ ^{rip. out. tiny} ov. with 1 med. foll.	" "	68-8-15-19 18 gr.
1157	♂ 6 ^{T.}	" "	74-9-14-20 19 gr.
1158	♀ ^{emb. 50mm. (total l.)} (3 rd)	<i>Phyllostomus hastatus</i>	133-19-23-33 115 gr.
1159	♂ 7mm. ^{T.}	" "	140-20-26-34 140 gr.
1154-59 in hollow tree			
1160	♂ im.	<i>Molossus bondae</i> ?	103-40-9-17 15 gr.
1161	♀ ^{perous} (nipp. along.)	<i>Dirias albiventris</i>	88-18-17-21 25 gr.
1162	♀ ^{nipp. short but conspicuous} (nipp. top. looked.)	<i>Dirias</i>	85-17-18-21 22 gr.
1163	♀ ^{nipp. uterus} ovaries small	" "	89-17-17-22 22 gr.
1164	♀ ^{skeleton} (slightly larger)	" "	82-17-17-20 21 gr.
1165	♂ ^{testis 6x4} protruding to outside	" "	93-21-18-22 22 gr.
1166	♂ T. 4mm.	" "	87-18-17-21 26 gr.
also 1171			
1160-66 in attic		1167 - shot over river	
1167	♂ ^{T. 4mm.}	<i>Dirias</i>	88-18-18-22 28 gr.
Nov. 15	1168-70 in vacant house	1172-73 under leaves of coconut palm	
1168	♂ 5mm. ^{T.}	<i>Corollia perispicillata</i>	73-8-14-20 19 gr.
1169	♂ ^{T.} 6	" "	74-10-15-22 17 gr.
1170	♂ ^{T.} 5	" "	70-10-15-21 17 gr.
1171	♂ im.	<i>Molossus bondae</i> ?	104-38-11-15 18 gr.
1172	♀ ^{no. in.}	<i>Uroderma bilobatum</i>	62-0-12-18 20 gr.
1173	♀ "	" "	65-0-12-18 21 gr.
- End to 1173 -			

SPECIES ACCOUNTS
BIRDS

M Koford
1952

Tinamotis pentlandi

²⁵
March ~~24~~ ²⁵ Huaylarco, 15300'

I walked along base of ridges looking for tracks. Found tracks of 3 which had roosted about 1 ft. apart on the lower part of a rocky slope at the base of the steepest part, then walked down onto flat, then back uphill - about 200 yd. in all before I flushed them (7:30 am). Near where they flushed was track of single bird. It had roosted in a similar position on opposite side of ridge (east side), then crossed rocky ridge, then down onto flat. I followed it for perhaps 1/2 mile onto another ridge to the west. Near top of this it joined 2 others which had probably roosted near this point as there were no tracks going far away, but right here snow so melted that I couldn't see exactly where they had roosted.

These 3 then stayed together and seemed to feed. Finally I saw them, already alarmed and giving a puk-puk walking rapidly over ridge. I followed and flushed them just over top. Coming up the hill on this side were tracks of another lone bird. They came to top,

M. H. Ford
1952

2

Tinamotis pentlandi

March ²⁵~~24~~ Quaylarco, 15,000'

turned around, and went back ^[tracks of one bird] the way they came. I followed them downhill 100 yd. and flushed the bird (at a distance of 20 ft.) off a nest with 6 eggs. This was among rocks but not far above a nearly level saddle.

No other tracks led to or from nest.

March ²⁷~~26~~

It was next to a grass clump, near yareta, bare dirt, pycnophyllum, rocks. Looked for tracks in snow again. On same rocky hill where single bird ~~was~~ roosted March 24, ~~and~~ a single bird had roosted and then walked down onto flat where I flushed it (about 300 yd. total). We walked in direction it had flown (to base of another rocky hill across a saddle) and after about 200 yd. found track of a single bird leading from a nest with 6 eggs. No other tracks so bird had spent night there. Eggs next to tola bush on gentle slope. Tracks led 150 yd. from nest with bird apparently feeding, then it had started to run and soon joined 2 others, also running. They all ran together and we followed only about 200 yd. (still going away from nest). We followed back the tracks of the two. They had not been nearer to the

M. H. Ford
1952

Tyrannotis pentlandi

3

March ²⁷~~26~~

Thaylarco, 15300'
nest than where we first encountered them and had come from a rocky slope $\frac{1}{4}$ mi. from the nest - probably roosted here but snow too melted to see.
At 10:30 went to relieve Carl at other nest. He checked nest before leaving and found that 9th egg had been added while he watched. At 11:30 I heard calling of at least 2 birds from near nest but saw nothing.

March 28

No bird or tracks near nest, at 7 am. 100 yd. E of nest 3 birds had roosted together 100 ft. out from rocks. I flushed them & they flew north. I looked for tracks until 10:00, then returned to where birds had roosted. 3 birds had come separately from direction they had flown and joined again near where they spent night. 2 had come across flat, 1 had gone up east side of nest hill to top, then turned north & come down hill again to join others. (It had gone up to where I first found tracks to nest March 25.) One of three made a loop away from others to only about 100 ft. below nest, then back to other 2. Then all 3 had

M. Koford
1952

4

Tinamotis pentlandi

March 28 7 Huaylarco, 15300'

walked around the hill to west and then south along base of ridge, passing within 150 ft. below nest. No other tracks near nest. I followed tracks until snow too melted - by this time 400 yd. from nest still going south. Watched nest till 11:00 but saw none.

March 29 Watching nest 2. At 9:40 am heard brief calling. At 9:45 saw bird 50 yd. above nest, just standing. Then it took a few slow steps, then began walking toward nest. 9:50 A bird is sitting on nest - hasn't been there more than about 3 min. as have been checking nest while watching other bird (which is still walking toward nest). Bird on nest got up, walked 2 ft. away, then back & sat on nest, Rocked back & forth from one foot to other several times, once pecked at ground beside nest, stayed 3 to 5 minutes, stood & walked away. About 10 ft. from nest passed other bird coming. 2 paid no attention. 2nd bird sat on nest while first continued to walk away. 2nd stayed 4 or 5 minutes, also rocked sideways several different times while sitting and once pecked at ground, then stood up & walked rapidly

M. Koford
1952

5

Tinamotis pentlandi

March 29 Huaylarco, 15300'

uphill without feeding. ^{1st} ~~Other~~ bird now apparently feeding a little. At 10:00 both walking uphill. At 10:05 another bird appeared near 1st. (This about 100 yd. above nest near cliff.) Then another? seen running to left & going behind cliff. Looking back to see if this was one of two, saw another running to left in same place & out of sight. This was either another chasing it or the same bird which had doubled back. Then looked back to where 2 were and there were still two. By now the second bird from the nest had been followed to near this spot so one of the 2 was probably this one. The other was either the first bird from the nest or the other seen with it, while the other of these was probably the one seen chasing. Now all were lost to sight briefly behind cliff, and then loud calling of several birds was heard. 3 birds now seen standing at foot of cliff about 1 ft. apart with necks stretched upward. This calling lasted 1 to 2 minutes. (10:10) The birds then separated and began feeding. At

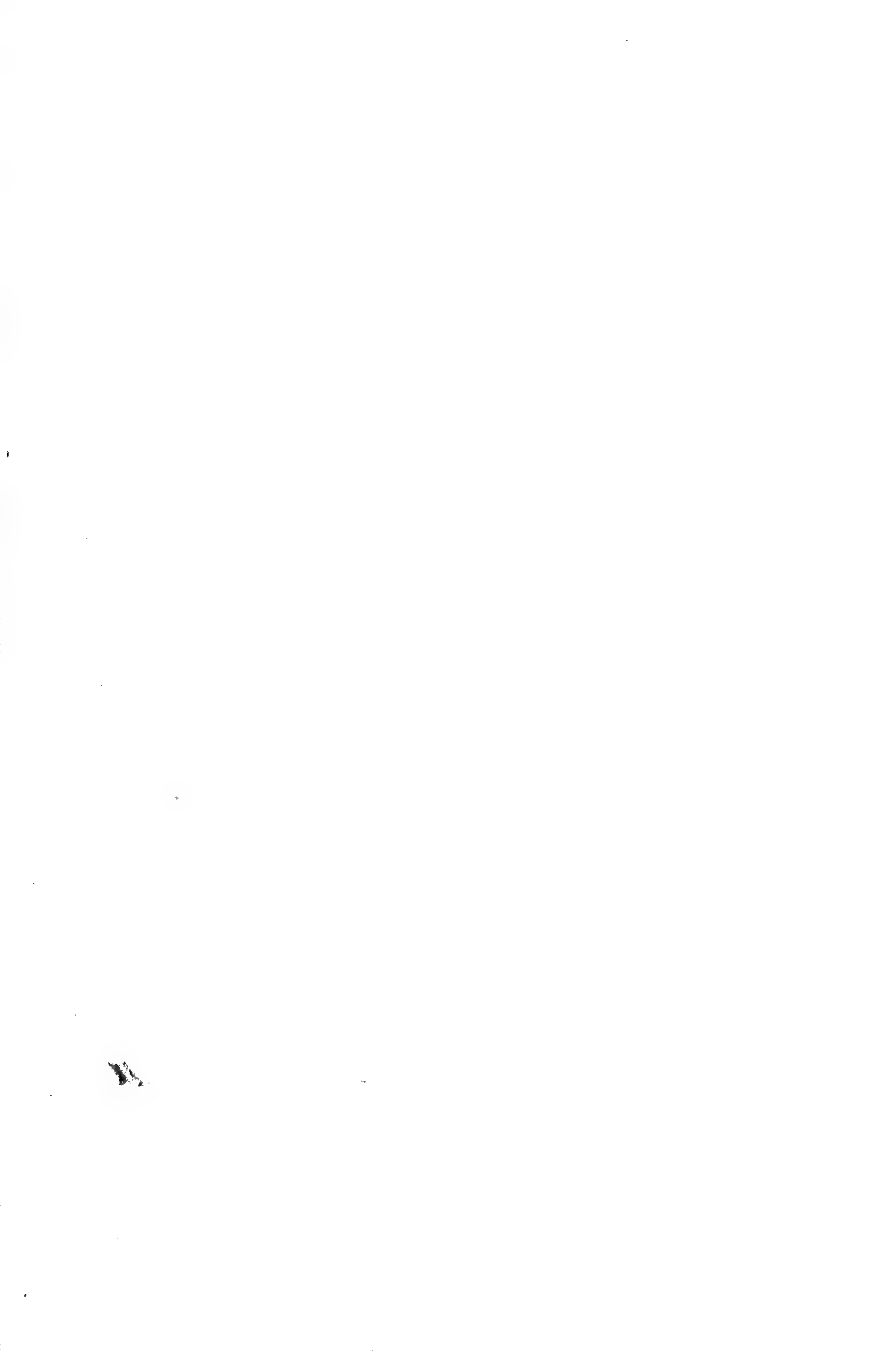
M. Koford
1952

Tinamotis pentlandi

6

March 29 Huaylarco, 15300'

10:20 one bird seen walking from this area down toward nest. Llamas and sheep have now appeared near nest. One walked 1 ft. from it. The bird coming downhill met llamas coming up from nest. Bird turned and walked uphill again. At 11:00 llamas had gotten 150 yd. away from nest but still no sign of bird returning. At 11:10 bird appeared near nest. 1 ft. from nest it picked a piece of pycnophyllum, dropped it near nest, picked it up again and dropped it on nest, entered nest facing upslope (left), turned to face right and settled down. Preened a little, picked feather from right side and put it down on left side. After 5 minutes turned 90° to face out from bush (toward me). Seemed to roll eggs under it with feet, also poked bill down under several times. Spent some time working at edge of nest with bill and sometimes reaching out to ground around, but I couldn't see just what it did. At 11:30 it turned again to face right, again followed by treading (egg-rolling?) motion. It pulled a feather



M. Kaprod
1952

7

Tinamotis pentlandi

March 29 Huaylarco, 15300'
from under right wing & put it down
in front. Now it became quiet. at
11:50 llamas again near nest. As one
walked 10 ft. from nest, bird pulled
head down close to body, then turned
head to watch as llama went by. at
12:00 a llama walked 6 ft. away, then
two walked 4 ft. away, one on either
side of nest. Bird sat quiet. Llamas
grazed near for 15 minutes but no
others quite so close. From 12:15 to
12:45 it snowed steadily. Bird
began to look a little white, occasionally
shook head.

AP 2 1952
April 2

Went to watch nest at 1:00. Bird is on
with head close to body - can't see
which way facing. No movement seen
until 3:15 - head now up facing me.
3:30 - turned to face right, head close
to body again. Shade on nest by 4:00.
4:30 turned again to face me. I left 5:15.

SPECIES ACCOUNTS
MAMMALS

M. Koford
1951

Saccopteryx bilineata

- Feb. 23 Laboratory Buildings, Barro Colorado Island
When we arrived at about 9:00 am at the cabins just below the lab. there were 6 or 8 of these bats hanging on the outside of the cabin to the ^(going up) left of the trail. They were mostly on the window screens and were very alert, flying when approached from either the outside or inside. They were too far from the ground to reach with a net. When I tried to hit them with rocks they moved to other screens on the same house. Finally some flew to the outside of the other ^(our cabin) house across the trail and when pursued here they disappeared among the trees. Eventually I chased them all away without catching one.
- Feb. 24 Carl saw one today on the outside of our cabin. None on the other house.
- Feb. 25 Carl located one in the afternoon on the outside of the house where we found them the first day. We chased it from one window screen to another until finally he got close enough to hit the screen from the inside and knocked the bat to the ground, stunned momentarily, where we caught it. It was still alive and very active the next morning. ^{Died by night (kept in sack)} ~~when I killed it.~~
a ♂ with testes abdominal?

M. Koford
1951

Carollia

Feb. 23 Laboratory Buildings, Barro Colorado Island

Carl hung a banana in the cabin across
(the one where the Saccopteryx were)
the trail from the one in which we stayed.

The door was open and one small window
screen was off. When he went in shortly
after dark there were two bats in the
second room (not the one with openings
to outside) and the banana had been
chewed. He caught one of the bats
- a ♂ with stomach distended with
banana.



M. Koford
1951

Myotis nigricans

Feb. 23 Laboratory Buildings, Barro Colorado Island

These bats were hanging on the outside of several of the buildings in broad daylight. On the Barbour and Zetek houses they were all single, mostly in corners formed where the walls, roof, & rafters met. We collected 4 of these - all ♂♂. On the Kodak house they were clustered in groups of 2 to 10 or more. On disturbance they flew a little more readily than the single ones. We caught 3 - all ♀♀.

Feb. 24 This morning Carl caught 3 more - 2 ♂♂ single as before, and a ♀, one of several clustered on the Kodak house. In the dark attic of the Chapman house we found large numbers in clusters. All we looked at were ♀♀ except for one ♂ and two Molossus (1 ♂, 1 ♀). All the ♀♀ were pregnant.

M. T. Ford
1951

Ctenomys opimus ♀

- April 28 Livine, 21 mi. NE Tarata, 15300', Dept. Tacna, Peru
Mounds were numerous here in sandy areas with bunches of grass. Most of the holes were closed most of the time. We heard no sounds from these tucos and saw none out on the surface. I opened one hole and set a Schayler trap in the entrance. The next morning the hole
- April 29 was plugged but the trap was not sprung. I opened 9 more holes in the same group of mounds — an area about 100 ft. in diameter — and set 10 Macabee traps well down in the holes. By noon 3 of the holes had been plugged, springing only one of the traps and catching nothing.
- April 30 In the morning all the holes were still open and no traps sprung. I left the traps in and plugged the holes. By mid-afternoon nothing was caught.
- May 1 In the morning one trap held a ♀, possibly immature, by the tail. It had apparently backed into the trap. When found, it was at the surface, frozen stiff, in a new ^{open} hole about

M. Koford
1951

Ctenomys opimus #

May 1 Iivine, 21 mi. NE Tarata, 15300', Dept. Tacna, Peru
2 feet from the one in which I set
the trap, which was still plugged.
Its head was at the entrance.
It had either backed into the trap
while digging this new entrance
or had dug it while trying to
escape from the trap. It was heavily
infested with lice, some of which
I saved. No other traps were sprung.

M. Koford
1951

Vicuñas

May 25

8 mi. SSW Zimbari, 15000', Dept. Puno, Peru
At 11:00 am I walked up the ^(south of road) canyon where we saw the band of 10 yesterday and over several ridges to the south, but did not see the band of 10 (with 2 young). I disturbed one band of 4 adults which moved down ^(east) toward camp, one band of 5 adults which moved north toward the road, one band of 3 adults which moved up ^(southwest) onto the steep rocky slope at the head of the canyon, and saw a band of 5 adults at the head of the canyon, and one lone adult near the stone house, ^[= House, CK notes] above the upper lake basin on the way back to camp. I saw the group of 4 three different times and it may not have been the same group each time. At 3:00 pm we drove up the road. In the canyon north of the road where we saw the band of 6 (1 young) yesterday we saw the band of 6 (Carl had seen them leaving this canyon when he walked up this morning.) In the canyon I walked up this morning was a band of 5 at the head near where I saw the 5 this morning and a band of 5 on the north side near

M. Koford
1951

Vicuña

2.

May 25

8 mi. SSW Limbani, 15000', Dpto. Puno

where I left the other band of 5 this morning. A little up the canyon from this group was the group of 10. Near them was another which joined the group when they started to move. When I returned to watch them from the car a little later, one was again separate from the 10. It moved toward the group and one of them started to chase it. The others followed and they all disappeared behind some rocks. When I got into a position to see them again there were only 10 in the group. Near the group of 5 a little down the canyon was a sixth one. The 5 seemed to pay no attention. The 10 grazed, including the two young. One young chased the other and they rubbed their necks together. Three adults in succession rolled on the ground. The group moved near some water and grazed. One stayed a little apart from the others. One adult and one young lay down. A dog walked by on the road. All 10 stood at attention and one - I couldn't tell which - cried.

M. T. Koford
1951

3.

Vicuña

May 25

8 mi. SSW Zimbari, 15000', Dpto. Puno

The group of 5 and the separate one also showed alarm, but none ran. The 10 moved up onto a rock. The separate one started toward them. The one in the rear of the 10 turned and chased the intruder with ears laid back. By this time all were out of sight behind rocks and I did not see the end of the chase. Soon the group of 10 moved back into sight on top of the rocks and about half of them lay down. By this time the sun had set and I left them.

May 26

This morning we drove up the road again. The group of 6 from the canyon north of the road was ^(north of) above the road headed uphill. The group of 10 was a little up the canyon from where we left them last night. Farther down was a group of 5 and one separate, probably the 5 and 1 we left here last night. Across the canyon was a group of 5, perhaps the same one seen yesterday morning and evening. Up the canyon from these was a group of 3. I watched the group of 10 for about $\frac{1}{2}$ hour. Seven

M. Koford
1951

4.

Vicuña

May 26

8 mi. SSW Limbani, 15000', Depto. Puno

of them lay down (with legs under them) and then ^(2 ad, 1 young) 3 of these lay down all the way onto their sides with legs stretched out. One stayed well away from the other 9 for the whole time. We returned to camp and I walked up to the stone house by the lower lake basin. ^{Uphill} From here I could see two groups of 4 adults each. I walked up to the upper lake basin. There was a lone one ^[= lone juv, CK notes] near the stone house where I saw one yesterday. To one side of it was a group of 3 and the other direction a group of 4 - all adults and definitely not any of the same ones I just saw from the house. Also very little chance that any of these were ~~the same ones~~ any of the 30 we saw higher up when we drove up the road.

May 27

at 1:30 pm I walked up camp canyon. By the house above the lakes (near which I saw one yesterday) was one a little below the house and one a little above. Below the lake (toward camp) was a band of 3 which ran north over the ridge. at 3:30 there was only one -

M. Koford
1961

Vicuña

5.

- May 27 8 mi. SSW Zimbarani, 15000', Dpto. Puno
below the house, lying down a short way from where the one was earlier. at 4:30 it was grazing again in the same place where it was at 1:30. at 5:30 it was too foggy to see from the lower end of the ^(south ponds - CK) lake basin above camp so I walked across toward the house. I disturbed one below the house and 3 on the slope to the north of the basin.
- June 9 (We have now moved to house above south ponds.) This morning a little before 10:00 am I noticed a commotion among some vicuñas moving into sight over the lower rim of the basin north of the house. Many of them seemed to be running and making noise. By the time I got out the telescope, all but six were quietly grazing. Two pairs were running and a third pair were rubbing necks together. I watched this last pair for 20 minutes. They lay down side by side and nuzzled one another. Then one stood up and straddled the other. Then the second stood and the first mounted it. The under one moved away and the other followed. The one which had moved away arched its neck and rubbed against the other.

M. Koford
1951

Vicugna

6.

June 9

8 mi. SSW Limbani, 15000', Dpto. Puno

More nuzzling and neck rubbing followed, with another attempt at mounting (by the same one?) Once both reared onto their hind legs.

Finally they began grazing and I lost them in the group. Now I looked over the whole group. I counted 22 - no young. One pair was still running. They ran for 10 minutes while I watched, always the same one chasing. Usually ears were back and tails down but sometimes one or the other pricked up the ears and once the pursuing one raised its tail. They were always close together and the pursuing one kept trying to thrust its nose between the legs of the other. They ran among the grazing group most of which ignored them. Occasionally one ran a few steps toward them. Finally they stopped and began grazing among the group. I kept track of them for 15 minutes and saw no more activity. By now all were grazing except for 5 lying down; and all had moved down near the lowest pond. Suddenly all got up and moved together a little up the hill. There were

M. Koford
1951

7.

Vicuña

June 9

8 mi. SSW Limbani, 15000', Dpto. Puno

22 in this group and a 23rd which stayed below by the pond. When I looked again about 15 minutes later they were in the same position and about 5 were again lying down, the rest grazing. When Carl came down the canyon to the house, they all looked up and one gave the alarm call, then they began grazing again (11:15). The ones lying down didn't stand up and one of them began rolling. I walked out to meet Carl and the group bunched up and moved a little uphill. When he went out at 12:00 to look again about half were lying down.

July 20

Started watching Carl's groups from stone shelter at 1:00. 6 up ^(across) hill, 1 between, 5 near shelter. 1:10 5 ^(group A) started down canyon, 1 between (AB) followed them all the way down to 100 yd. from our house where they started grazing. AB then returned to group on hill. 1:17 ♀♀ on hill: 4 lying down, 2 grazing. 1:25 1 of 4 stood up. 1:29 another ♀ now standing, ♂ lying down. (AB didn't chase them ^{or start their movement} & they paid no attention; when they stopped he stopped.)

m. Koford
1951

8.

Vicuña

July 20 8 mi. SSW Limbaní, 15000', Depto. Puno

1:35 all moving down hill - I didn't see start of movement. Stopped at bottom and grazed (below other bunch). Several times 88 spit at others when they became closely bunched. Still grazing at 2:15 when I left. None small enough to be this year's young. When I came down I scared both bunches up the hill again.

July 28 I watched B group from 6 to 7 am. ^{at} 6:00 one vicuña went over ridge at ^{of low part} SW end of B group was 300 yd. NE near ridge crest. at 6:04 2 were prone & 3 standing. at 6:08 4 were down & at 6:15 5 were down, then 1 stood. All were chewing. at 6:23 they were still the same, and the sun just hit them. at 6:28, still the same. One stretched its neck flat on ground for 4 minutes. at 6:35 two more stood up. The two prone each grazed a little in this position. at 6:36 another stood and at 6:44 the last stood. At 6:47 one lay down; at 6:52 another; at 6:54 another; at 6:55 another. Two of those prone were chewing, and 2 not. at 7:00 when I left they were still the same.

July 31 6:25 am A group (6) all up, about opposite highest part of rocky part of S ridge. B group

M. Koford
1951

9.8.

Vicuña

July 31

8 mi. SSW Limbani, 15000', Dpto. Puno

(4) also all up, near NE (low) end of S ridge. Sun hit both groups 6:30. Just before sun hit, one of A's rolled 3 times, another twice. 6:35 B ♂? walked 100 ft. up slope, defecated, then walked and loped 100 yd. up slope to west. The other 3 moved 50 yd. along the slope (SW), loping a little, then stopped and grazed. ♂ walked back to 50 yd. from them and grazed. At 7:00 one A was prone. A group of 5 came over S ridge at end of rocky part 200 yd. NE of A's moving toward them. A ♂ moved 100 yd. toward them. They stopped and he stopped. One of them watched him, other 4 grazed. He returned to his ♀♀. The 5 moved on toward A's along base of rocks. A ♂ started toward them again. The 5 moved up into the rocks and continued. They passed within 50 yd. of A ♀♀. The A ♂ made them lope a little as they passed but did not follow once they were past. They stopped on the green part 100 yd. above A's and grazed. Suddenly they all ran downhill a little way toward AA. Then A ♂ started toward them again and they moved out of sight. A ♂ followed out of sight and A ♀♀ moved in direction

M. Koford
1951

10.

Vicugna

July 31

8 mi. SSW Limbani, 15000', Dpto. Puno

he had gone but remained in view. at 7:15 a group of 4 appeared briefly at top of ridge a little SW of where 5 had come over, then disappeared. at the same time, 2 came over ridge 100 yd. SW of B ♂ and walked SW 100 yd. and grazed. at 7:30 B group still as last described. The 3 now moved up to join the ♂, then all walked SW until 100 yd. from 2. Now they seemed to see the 2 for the first time. ♂ chased the 2, ♀♀ followed. Chased them clear across A group territory and over the hill. (A group still up the canyon with A ♂ out of sight.) 2 B ♀♀ ran after ♂ across A territory, other ♀ stopped at boundary. When ♂ stopped, 2 ♀♀ ran back to join 3rd. ♂ also loped back to join them and all grazed.

Aug. 5

11:00 AM Group of 8 by big rock below our house (B group territory). No others in any part of A or B territory visible from rock shelter. 2 ~~♂~~^{of 7} prone. ^{one} went down to far end of territory ^{beyond} (NE end of S ridge) to chase back a group of 5 (including one young) which came over the hill. 2:40 PM ^{to 3:30} 6 A's near house, ~~some~~⁴ B's by rock. (can't see all)

M. Koford
1951

Vicuñas

11

Aug 6

8 mi. SSW Limbani, 15000', Dpto. Puno

At 8:00 AM a group near NE end of S ridge,
(4) all grazing. 8:15 Carl drove out and
started walking uphill, FF followed.
defecated & urinated. All walked west,
paused at top of ridge and FF grazed,
then all walked on, keeping near top of
ridge until they got up to rocky part,
there disappeared from my view (from
house) but still on this side of ridge
and presumably in upper part of their
territory. This at 8:30. At same time
two alpacas appeared by big rock
below house from up canyon.

Movement and roundabout route of
vicuñas could be explained by alpacas
in their territory.

Aug 7

12:30 about 35 on hill south of house.
Zone one from near corral SE of house
chased them all over the hill. 4 B's were
by big rock below house some time before
noon today. 6 A's were by house yesterday
afternoon. 1:45 A's by house again.
Big bunch in same place up hill again. Zone
one by corral again chased them over hill.
3:15 Big bunch - 40 by count this time - came
over again and grazed 150 yd. SE of house.
One which chased them now not in sight.

M. Koford
1951

Vicugna

12

Aug. 7 8 mi. SSW Limbani, 15000', Depto. Puno

4:00 pm A's now just below house in driveway. Big bunch got down to where they were seen again by lone one (out of my sight to east) and he chased them all up the hill and over the same way as before (south). 4:30 Lone one by corral, A's below house. 5:00 A's above house, B's by rock.

Sept 18 No stock today. 3 vicunas just below house late pm A? (in lone one territory)

Sept 19 10:30 am groups of 1 and 3 above house. 3 went up & over hill toward A territory. 1 went down hill where lone one used to stay. 2 pm 3 above house in direction of rock shelter. Looked at them often from 2 to 3:30. Only lying down was one at about 2:30 for not over 10 minutes. 2 defecated at 3:00. 4:15 still there, all grazing.

Sept 20 5 below big rock below house early am; then stock moved in.

M. Koford
1961

13

Vicuña

Peru

Nov. 11

Huaylarco, 52 mi. ENE Arequipa, 15000', Dpto. Arequipa

at 9:10 am drove from camp to K 38. Saw 2 groups of 5 on left near K 37 and one of about 11 just before K 38 on left. Parked beyond K 38 on right. Group of ^(1x)6 in left canyon and group of ^(3x)8 on right slope of right canyon. ^[E. 138.2 Draw] Uphill from them group of 4 or of 8 at 9:20 returning from direction of 6. One of 6 giving alarm squeal. Fox walking right into midst of 6 ignoring them. Vicuñas moved uphill out of its way while ♂ walked around it with tail up. Fox walked on, urinated on rock, ♂ followed about 200 yds., then returned. 9:25 at least 10 appearing over ridge above 4, then most disappeared again behind ridge. Group of 4 is 5. ~~at~~ 9:30 to 10:30 - no lying down in groups of 6, 8, or 5. 10:15 - 8 moved 200 ft. to graze by stream. 10:30 fox came back by 6 and up into rocks, again passing (in opposite direction) right by where they grazed. Again they (at least 2) squealed and at first, led by ♂, moved toward fox. When it got close all ran a short way away. As it passed, ♂ ran close to it but it still ignored him and he didn't follow. 10:45 still no lying down. Some chasing among 6 which

M. Koford
1951

Vicugna

14

Nov. 11

Huaylarco, 52 mi. ENE Arequipa, 15000', Dpto. Arequipa
I missed. Some of ♀♀ & young of ♂ walked
into stream. At least 3⁴ adults & one y.
lay down, then shook. One adult repeated
this at least 4 times, 1 young 6 times.

Two, & ^(or 1 twice) maybe 3, young defecated
immediately on entering water. One adult
also. 11:05 one adult lay down. 11:08
this one up, 2 others down (1 young & ♂?)
up again almost immediately. 11:10 one
adult down. Meanwhile at 11:00 fox came
back again by the group of 6. Again at least
one squealed and this time 2 ♀♀ as well as
the ♂ followed it with tails raised until
it passed them. It lay down once and
urinated once while they were doing this.
11:15 all standing again in group of 8, as
also in groups of 5 & 6. 11:20 group of 8: one
young approached one adult with tail up, adult
laid back ears & young retreated, this
repeated. 11:25: One young lay down for about
3 minutes. 11:30 All still grazing in all 3
groups (except ♂ of 6 out of sight up canyon).
11:45 8 & 5 still the same, all of 6 out of sight
up canyon. A few others still in sight on
top of ridge above 5. ♂ of 5 watching them.
Watched one of young in 8 defecate & urinate -
this one a ♀.

7.

11

12

13

14

15

16

M. T. Ford
1951

13.

Vicuña

Nov. 15

Huaylarco, 5.2 mi. ENE Arequipa, 15,000', Dpto. Arequipa
Alpacas 200 yd. left (north) of road at K 137½.
Watched ♂ past K 138. 5- 100 yd. away. 11:35.
11:40 1 young defecated on pile.
11:45 1 young went across pile, stopping to
stamp front feet & spread hind legs slightly
but didn't defecate. 11:45 1 adult lay
on side 3 minutes. 11:50 1 adult defecated
on pile. 12:20 ♂ went 50 ft. to pile, defecated
& probably urinated, then continued
200 ft. east and grazed. 1 ♀ lay on side < 5 min.
♀♀ & young moved a little east. ♂ from 5-
came to where they had been and they
ran a little toward their own ♂ who
just watched. 12:25 1 ♀ walked uphill
to sandy area, pawed ground with first
forefoot, then other, sniffed ground, rolled.
Others moved up to same place. 1 young
rolled, then another? adult & young just
after it in same place. 12:30 ♂ prone.
2 young defecated on pile ^(100' from 1st pile) and one urinated.
(a ♀ I think). 12:45 1 young defecated &
urinated (♀) on pile. 12:50 2 adults ^{♀♀} defecated
on pile. ♂ stood up. Another ♀ defecated
on pile. ♂ now chased 4♀♀ of 5- back
to west away from stream (their ♂ now
a little uphill to west) and all moved
back to former position. 1 adult ♀ defecated
on pile. ^(1st pile again) 1 young defecated & urinated (see?).

M. Koford
1951

16

Vicuña

Nov. 15

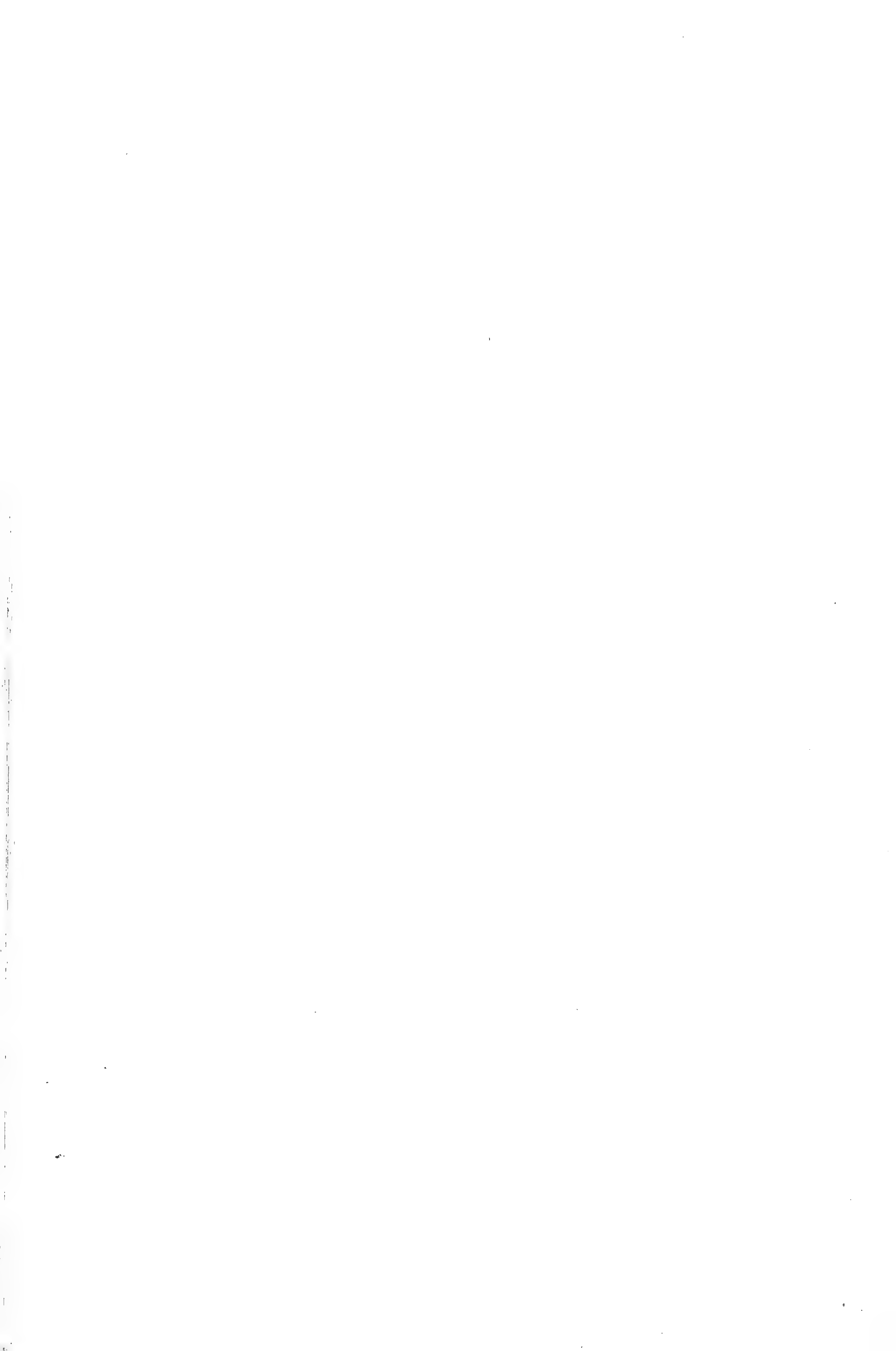
Huaylarco, 52 mi. ENE Arequipa, 15000'
(urinated quickly & with visible stream
like others, but didn't squat much).
12:55 1 young nursed < 2 min. ♀ moved
away, young followed & tried to nurse
again, ♀ kicked at it. 1 ♀ prone for 3 min.
1:05 About 30 appeared at head of canyon
200 yd. away. ♂ went up to chase them.
1 adult defecated, 1 ad. rolled. 1:15
1 ran down canyon and joined group.
Another ran down canyon and chased
the group, then stopped, then again
ran into midst of group ^(when one tried to break away) and divided
it. This time one ran out and away
up canyon. One which had been chasing
ran after it. Several ♀♀ & young rolled.
4 lay down - 3 prone, 1 on side. Longest
down about 5 minutes. I presume the
first which joined them was an imposter
and second was their own ♂ chasing
not them but the intruder. 1:40 ♂ of
5 ran from 100 yd. away to chase ♀♀ of 5.
It ran right among them and chased
them 200 ft. before their ♂ appeared
running down canyon. Then ♂ of 5
retreated, 2 ♂♂ stood 50 ft. apart for
a few minutes, ♂ of 5 returned to his
group and ♀♀ of 5 returned to their

m. Koford
1951

17

Vicuña

Nov. 15 Huaylasco, 52 mi. ENE Arequipa, 15000'
former position. 1 young defecated and
urinated (?) and another young defecated.
2:15 1 ad (~~♂~~) walked 100 ft. from group
and lay on side in sand, then changed
to prone position. Another adult pawed
ground, then lay on side. 2 others down
briefly, one prone, one on side. 2:20 Two
which lay down at 2:15 now up and with
group. ♂ of 5 ran about half way (50 yd.)
toward S and they moved a little away.
2:45 1 young approached an adult as if
trying to nurse with tail up. Adult kicked
it away several times. Others moved
toward them until 6 (4 ad, 2 y) stood
very close together, ^{the 4 adults} with heads raised
& ears back. Stood thus several minutes,
none grazing, then moved apart. Each
young followed very close to an adult
and when they had moved out of tight
group both young lay down beside
adults they had been following. One
adult nosed ^{prone} young lying beside it and
young raised its tail. ^{Then adult also lay down (prone).} Two remaining
adults made passes at each other with
necks, still with ears back, then moved
apart. One lay down on side, then prone.
This one ^{prone} one of young stayed down ^{at least} about



M. Koford
1951-2

Vicugna

18

Nov. 15 Huaylarco, 52 mi. ENE Arequipa, 15000'
10 minutes; others less. 3:05 1 young
defecated & urinated (sex?) 1 adult (sex?)
defecated and perhaps urinated. 1 ad ♀
defecated and urinated.

Jan 26, 1952

at 137.4 at 3:05, 1 lone one on ishu ridge
and 10 up 137.5 draw about 500 meters E 137.
Watched 11 at 138 (6 A, 5 Y). They were on
both sides of road at 3:10. Moved uphill
100 yd. from road & grazed. 1 adult prone
3:10 to 3:30. 3 young & 1 adult (different one)
prone 3:30 to 3:55. Then another adult
& young down. All up by 4:00. All but one
adult & 1 young walked rapidly to top of
hill and seemed to watch something on
other side, then all came back and grazed
again. 4:25 1 young did "wolf howl" 4 times
on feces pile, sniffing pile each time, then
pointing nose straight ~~in~~ up with eyes closed.
All still up and grazing at 4:30 when I left.

Jan. 29 10 am Drove up road from 137. at 137.7,
group of 10 by road - moved up a little to left
of road as I drove by. at 138.2, 1 adult &
1 young to left of road. 100 yd. N of 139, group
of 49, several pairs fighting. 1 a little apart
may have been chasing group rather than a part
of it. Turned & drove back. Group of 9

M. Koford
1952

19

Vicuña

Jan. 29 Huaylarco, 52 mi. ENE Arequipa, 15000'
running up E 138.2 draw - continued out of
sight. In SW branch, one group of 2 and
another of 2 being chased by a third up
SW branch out of my sight to S. Then one
returned to join other two and the three
moved over the hill to E. ^{Group of 30 ♂♂} at 138.1.

Feb. 1 The ♂ above camp still has another adult
with it this morning. The group in
the draw across the Stream from camp
& about opposite 137½ were down at
mouth of draw. I counted 13 with
4(?) yearlings. (Started Feb. 1 calling
last year's young "yearlings" instead
of "juveniles") - About 200 yd.
upstream from them on same side
of Stream a group of 7 with 2 yearlings
(this also a ♀ group).

Feb. 3 9 am Group across Stream from camp is back
to 4, apparently same 4. They were grazing
near Stream. When I went out, moved up
into grass & rocks. ♂ chased some others
over hill, then came back & lay down.
Oldest ♀ also lay down, 2 yearlings
grazed. The bigger one with bad eye
rubbed ^{left} eye once on leg & once on bush.
Once it ran into a rock on that side
while grazing. ♂ came down to others

M. Kolford
1952

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Vicuña

Feb. 3 Huaylarco, 52 mi. ENE Arequipa, 15000'
and old ♀ got up and went down to
pile - defecated & urinated. Smaller
yearling ran down & ditto. Other
followed, walked past pile, then
stopped & went back & performed.
Both these are ♀♀. Then ♂ came to
pile. Then I quit watching. The
pair above camp on our side of Stream
are grazing very near Stream 200 yd.
above camp, almost directly
across from the 4 which have now
moved down close to Stream again. 10:30
just below road at 137½ group of
8 with 2 yearlings. This is group that
was 11 with 5 yearlings. They ran
across road and up onto "ichu ridge"
when I walked up. I watched them
graze up there and lie down during
a hail storm. One yearling is a ♀.
Left for lunch. Watched 8 again p.m.
They were across Stream at 137½ in
mouth of draw where 13 were Feb. 1.
One walked down draw ^(to chase them?) & moved
upstream 200 yd. One yearling is a ♀,
one a ♂ ("wolf howl" twice when
passing pile). The adult ♂ chased
a group of 4 (probably ♂♂) which came

M. Koford
1952

Vicugna

Feb. 3 Huaylarco, 52 mi. ENE Arequipa, 15,000'
over hill toward them - chased down
across stream to near me. They gave
alarm squeal at me and ran on around
me. ♂ stopped 100 yd. from me and
stood several minutes squealing at
me, then returned across stream,
stopped, and squealed some more.
His group moved a little toward
him and watched. Finally he
returned to them. He chased
another group of 3 which came
over ridge from same way as 4.
These ran back over ridge. One,
a yearling, refused to be chased
at first, acted like a ♀ and even
advanced toward ♂ wagging tail
and thrusting neck back + then forward
toward him. He turned and kicked at it with
tail raised. Finally it walked
away and over ridge. All 5 adult
♀♀ in this group look pregnant.

Feb. 8 10 ~~at~~^{at} 137.2 (early pm) No more seen
until 138.89 : 4 ^(all yearling ♀♀) ~~300~~ meters SE 139 ; 2 ^(adults) 100 meters
NW 139 ; 6 ^(adults) 200 meters NE 139 ; 2 or more on ridge
at head of E 139 Draw. Started back.
2 groups of 6 each in W 138.6 Draw. One
group crossed road toward E 138.4 Draw.

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1952

Vicuña

22

Feb. 8 Huaylarco, 52 mi. ENE Arequipa, 15000'
Other group (5 A, 1 yearling) to east behind hill. They passed a single one lying down which I had not noticed. They paid no attention to it nor it to them. It stood up and went to a pile and stood a ~~new~~ long time after finishing, then moved away slowly. ~~I think~~ It was a ♀, young-looking - perhaps a yearling. I moved on to look for the other 6 but could not find them. 3 were grazing near stream in E 138.2 draw opposite SW branch. 5 grazing at head of SW branch. 6 others were moving away from there and out of sight to the east. 4 more appeared from the west, crossed E 138 Flat, crossed E 138.2 Draw above the 3, and disappeared to east. 5 at head of SW branch moved up to top of ridge and 3 in bottom of 138.2 draw moved up SW branch to where 5 had been. 5 moved back a little and two groups were about 100 yd. apart. 5 have one sure and another probable ^(or 2-year-old) yearling. 3 have also one sure & one prob. yearling. The 2 yearlings in 5 started to run and the larger one kept running right down to join the 3. The ~~2~~ ^{adult} paid no

M. Koford
1952

Ticuna

- Feb. 8 Huaylarco, 5.2 mi. ENE Arequipa, 15000'
attention to it, but the larger
yearling? chased it and fought a
little with it. However it stayed
with the group. About an hour later
♂? of 5 ^(this is a ♀ group - none of young cared in either group) (now 4) walked toward
3 (now 4). ^{adult} ♂ of latter ran at him
and he stopped. The 2 ♂♂ grazed
side by side between their groups
and gradually their ♀♀ ^{& young} moved closer.
The two groups grazed almost as
one for about an hour until I left
with no further clashes. The ♂♂
stayed always more or less between
the groups and the new one stayed
with the group it had joined. At
138 there were 3 above (west of) road.
Two were yearlings. They went over
the hill before I discovered whether
♂♂ or ♀♀. In canyon of stream that
crosses road at 137.65 there was a
group of 5 above road and of 10
farther up. The 5 (♂♂?) moved 200 yd. down
road ^(SW), then across road and off toward
Stream. The 10 moved up canyon out of sight.
Feb 9 2 pm 10 with 2 ^(on a ♂) yearlings below road at
137.4. 4 with 2 yearlings on E 138 flat.
3 with 2 yearlings on road at 138.1.

M. Koford
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Vicugna

- Feb. 9 Huaylarco, 52 mi. ENE Arequipa, 15000'
3 (♂♂?) crossed road at 138, were chased by ♂ of 3 at 138.1, and ran across E 138 Flat. No others in E 138.2 Draw. Nothing to correspond to groups I watched yesterday in SW Branch, which must have resulted from some disturbance.
- Feb. 10 AM Opposite 137.4 and near stream (W side) were 2. Across from them in mouth of E 137.5 Draw was 1. On hillside to W of road at 137.8 were 10. 2 (♂♂?) ran up canyon which crosses road at 137.65 and up near 10, whose ♂ chased them on up & over hill. 150 yd. W 138 were 4 (3 yesterday) with 3 yearlings. None in bottom of E 138.2 Draw or around Rocky Hill. I watched the 4 with 3 Y. One of the yearlings pranced about with tail up whenever they moved about. The ♂ chased it several times. ♂ lay down much of the time. I can distinguish all 3 yearlings. The one which gets chased is smallest. Of other 2 one is darker and older looking (this one sexed - a ♀) and the other has a very fuzzy head. All moved down to the road at the culvert just beyond 138 and rolled on road bank just beyond culvert below road.

M. Koford
1952

25

Vicugna

Feb. 10 Huaylarco, 52 mi. ENE Arequipa, 15000'
♂ chased the aggressive yearling many times but it stayed. Several times ♂ became so aroused that it also chased other two. The 10 moved up to 137.9 on road and their ♂ ran up to 138 as if to chase 4. ♂ of 4 moved toward him, all stood for a while, then ♂ of 10 gradually moved up to join his group which had moved up to where 4 had originally been. 4 grazed above road 100 ft. beyond 138. Band of about 23 ♂♂ came over ridge beyond E138.4 Draw, crossed this draw (chased by a ♂ here?), passed Rocky Hill, and entered mouth of E138.2 Draw. A ♂ came from up this draw and chased them onto sand of Rocky Hill. They stayed here and fought among themselves. Some came down onto grass near Stream in front of Rocky Hill. ♂ of 4, followed his 3, ran down toward them, crossed road at about 138.2 and crossed Stream just opposite point of Rocky Hill nearest Stream, still followed by his 3. Here they stopped, grazed a few minutes near some yearling ♂♂, then, ♂ still leading,

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1952

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Vicuña

Feb. 10 Huaylasco, 52 mi. ENE Arequipa, 15000'
walked back across Stream, all the way
up hill the way they had come, and on
up to top of hill opposite ^(row of) 138, where they
grazed. The 10 are still about 100 yd.
away about opposite 137.9. About an hour
later, ♂♂ near Rocky Hill began making
a lot of noise with their fighting and
♂ of #4 again moved toward them with
3Y following. 7H stopped by road at
138.1 and lay down. Then all 4
grazed here just below road, then
moved down by Stream. There are
now 4 with 1 ~~or 2~~ yearlings grazing in
bottom of E 138.2 Draw at base of
Rocky Hill. Their ♂ twice chased ♂♂
which are still grazing between Rocky
Hill & Stream. There are 9 of these ♂♂
left, all yearlings ^{but one} I think. ♂ of 4
with 3 yearlings chased a group of 6
(or 5 already being chased by 1) which
crossed road at 138, heading north.
His 3 yearlings followed right along
after him. They ended up grazing above
road at 138.2. Moved down to Stream
again and across. 3 yr. each lay down
in water and shook. ♂ stood and watched
them, then crossed without bathing.

M. Koford
1952

27

Vicuña

Feb. 10 Huaylarco, 5.2 mi. ENE Arequipa, 15000'
I saw the smallest (the frisky one) urinate and it too is a ♀. They grazed on east side of Stream just north of where creek from E 138.2 Draw enters. The other 4 in that Draw are now on south side of this creek about 100 yd. away. The "frisky one" ran about 50 yd. up the draw and the ♂ of the 4 which belong here started toward it. It ran back to its own group & was chased by its own ♂ but stayed. ♂ of ^(south of creek) resident 4 now came toward ^(north of creek) newcomers, whose ♂ went to meet it. They watched each other separated by creek, then ♂ south of creek returned to its group and allowed ♂ with 3 yearlings to remain on spot east of Stream just north of creek from E 138.2 Draw. On my way back saw a group of about 15 being chased across E 138 flat to north by ♂ of 10, this group being 100 yd. west of road at 137.8.

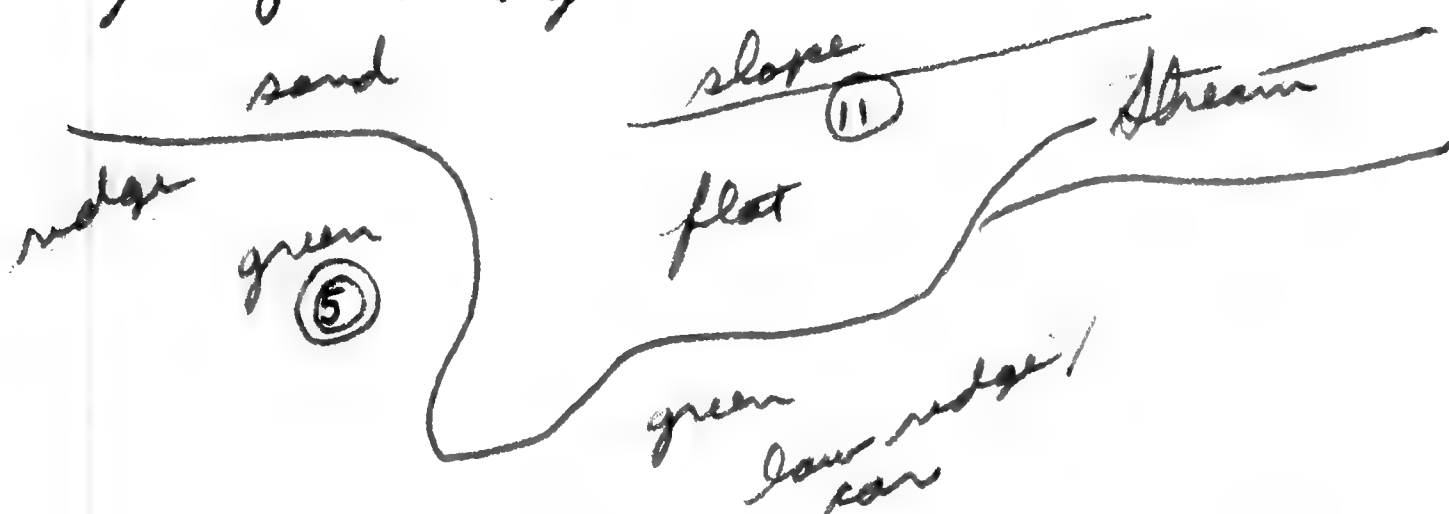
Feb. 14 1:30 pm At 136.2, 21 below corral, 4 (♀ group) up hill & upstream. At 134.2 11 ~~by Stream~~ on right in usual place. At 133.6 low ♂ on right. At 133 on left one group ^{11 in this group seen later} mostly hidden behind sand ridge, & another of 3 100 yd. from them.

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28

Vicugna

Feb. 14 Huaylarco, 52 mi. ENE Arequipa, 15000'
Drove off on right at 133 to watch
group with juv.



The 11 with juv. were just at edge of flat where sandy slope begins. 4 were grazing on green across stream, and another, probably their ♂, was chasing 2 more over the hill. Started watching at 1:45. ♀ with juv. about 100 ft. from others (♀♀), ♂ beyond her. juv. lay on side in sand several times and dusted as adults do. At 2:03 was nursing (I don't know when started) at 2:05 stopped, adult lay prone. juv. rubbed against ♀'s head & neck and they rubbed noses. ♀ stood and at 2:08½ juv. nursed again until 2:09½. Then it walked away, "gambled" back to adult, dusted again, lay prone and stretched neck on sand, then raised head and lay in adult position with legs tucked under. ♀ lay down in same position 5 ft. away. (between 2:10 & 2:15).

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Vicuña

Feb 14 Huaylarco, 5.2 mi. ENE Arequipa, 15000'

2:20 ♂ has now joined other ♀♀, others as before. Juv. now has head down on sand in front of it. 2:25 ♀ is up grazing juv. still prone but head up. 2:33 juv. up, scratched front leg with hind, 2:36 ^(prone) down again. Both moved down onto grass, then juv. went back uphill 50 ft. from mother and lay on side. ♀ moved back near it, 100 ft. from rest of band. Juv. prone now (2:45). Up at 2:50, both walked a ways, juv. nursed 2 min. both walked to a pile. Juv. went first sniffed pile, raised tail and spread legs but was too far away to see urine stream. Didn't see any feces drop either. Then mother went. Juv. tried to nurse while mother on pile and again just after but mother walked away. Juv. sniffed pile, raised tail, lowered tail & walked away. Both walked with whole band (now near Stream) about 50 ft. One ad ♀ urin. & def. in pond. Juv. prone at 3:07, up at 3:16, prone at 3:19 until 3:43 when it nursed again. ♀ meanwhile had stayed within 20 ft. of it grazing while rest of group moved 100 to 200 (♂) yd. away. ♀ now broke

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Vicuña

Feb. 14 Huaylarco, 52 mi ENE Arequipa, 15000'
away from it while it was still nursing
and ran with juvenile with or ahead of
her to join rest (now at foot of slope
in sandy area again). Returning: at
134.1 on right lone one; at 134.5 11 on left;
at 136.2 4 (3 pregnant) on right near road;
at 136.7 4 just across Stream (same 4
as across from camp with 2 yearlings ^(one with bad eye))

Feb. 26 4 pm At 137.8 just west of road 6 &
1 across road which later joined
them (this the ♂ I presume which
had probably been chasing a group
of 11 ♂♂). Of the 6, one was a yearling
♂ and one of the others did not
look pregnant. On E 138 flat were
3 and another one 100 yd. from
them which ran toward them as if to
chase them, then stopped 100 yd. from
them. 200 yd. E of 138.9 were 4 adults.
50 yd. W of 139 was 1 adult. On E 139
draw were 6 adults with 2 juveniles.
On W 139.3 draw were 9 adults with
1 juvenile.

March 19 I drove up the road at about 4:30 pm
from our new camp at 134 to 139.
The road workers had just walked
home and I saw few vicuñas.

M. Koford
1952

31

Vicuña

March 19 Huaylarco, 52 mi. ENE Arequipa, 15000'
At 137 there were 20 ± ♂♂ across stream.
At 138 there were 4, probably the ♂
with 3 yearlings near top of ridge. At
138.9 there were 9 adults with 2 juveniles
across stream and half way up slope.

March 20 Drove up the road in the morning. A group
at 135.6 down in stream bed so I could
not see them. Lone one at 137.2 between
road and stream. Large group of ♂♂?
running up E 137.5 draw. 7, still
with no young, 100 yd. above road at
137.9. 14 ~~4~~ adults with 3 juveniles at
138.6 near top of ridge, above^(w) road.
Turned around at 139 seeing none of
usual groups. Saw the ^{same?} 14 A, 3 J. again
at 138.7 now below road & across
stream. One of the adults is a very
young-looking & fuzzy yearling. At
138.6 about where 14 A, 3 J were first a
group of 9 A, 4 J was coming down the
hill. A nearly white ♂^{normal dark patch on right side} followed
100 yd. behind them. When they got to
road, ♂ of group chased white one. It
ran around him and across road.
Then ♂ of 14 A, 3 J chased it. It ran
down stream 100 yd. and started
grazing. Moved gradually about

M. Koford
1952

Vicugna

32

March 20 Huaylarco

another 100 yd. down Stream while I was watching other groups. Meanwhile 14 A, 3 J moved upstream. I last saw them at about 138.9, still on far side of Stream. 9 A, 4 J ^{crossed road,} stayed by Stream for a while, then also moved upstream the same way first group had gone. Meanwhile, 2 more groups appeared over ridge at about 138.6. One group of 7 A, 2 J ^{appeared ~~crossed~~ nearer 138.5,} grazed above road, then moved north out of my sight along road but not crossing it. Another group of 10 A, 2 J stayed near top of ridge ^{at 138.6} W of road. Their ♂ once chased back 4? others which appeared over ridge. Another single one appeared about 138.5 and stayed and grazed. 3 one- or two-year old ♂♂ appeared near him, went to pile, 2 gave repeated "wolf howls", one of them after smelling where he had just gone. These 3 then crossed road, crossed Stream, and moved uphill on other side. Now 6 A, 4 J appeared about where 3 ♂♂ had appeared and crossed road & Stream at about same place (138.5), their ♂ chased the 3 ♂♂ and also the

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1952

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Vicugna

March 20 Huaylarco

white one which had meanwhile moved back upstream hidden from me behind hill. Then the 6A, 4J moved slowly uphill and upstream. I drove down to 138. At 138.2 were 2 adults near Stream. At 137.9, ♂ with 3 yearlings was between road and Stream. Just across Stream was group of 5. 50 yd. downstream were 16 ♂♂, ♂ of 5 apparently just returning from chasing them. Turned around and drove back toward 139. The 10A, 2J just moving down across road at 138.8. They crossed Stream and grazed 75 yd. downstream from ♀ where 6A, 4J now grazing. The 4J grazed together a little apart from adults. The 2J from other group ran up to them and the 4 ran back to their group. The two went with them, and then one at a time returned to their own group. This group (10A, 2J) now moved downstream. The 6A, 4J moved upstream. 17 ♂♂ above road at 139. The 6A, 4J now across Stream at 139. 50 yd. up draw from them are the 9A, 4J. Above road at 139.1 are the 7A, 2J. ♂ of 6A, 4J chased the 17 ♂♂, crossing Stream & road to do it.

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Vicugna

34

March 20 Huaylarco

Drove back. Group of 4 and 5 still on either side of Stream at 138. At 137.7, group of 8 A, 5 J between road and Stream, some others disappearing over ridge across Stream. One of these being chased by an adult, which then joined 2 adults and a juvenile across Stream at 137.6. At 137.5, 6 ♂♂ near road, 3 ♂♂? across Stream, and 2 or more adults (together?) near Stream (on this side of Stream but hidden by bank). At 135.9, just above road, 7 A, 2 J. Drove up the road again in afternoon. At 135.5, across Stream, 7 A, 2 J. 4 (♂ with yearlings?) up hill at 138. At 139, 9 A, 2 J ^{both nursing} above road; 8 A, 5 J across Stream and a little up draw. At 139.1, 17 ♂♂ above road; 6 A, 4 J across Stream. Copulation occurring in this last group - lasted about 10 minutes after I arrived - ♀ prone, ♂ with forelegs in front of her hips and hind legs bent under her, flipped tail up and down at times, nosed head of ♀ once. ♀ once ^{pointed} ~~put~~ nose upward until it touched ♂'s head, once shook head, once turned head side wise to nose ♂, otherwise both quiet. I was looking

M. Koford
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Vicugna

March 20 Huaylarco

away as it ended and when I looked back ♂ was paying no attention to this ♀ or any other. I watched them 15 min. more & nothing happened. On E 138 flat was another copulating pair. ~~At~~ 50 yd. from them 4 others were grazing. ♂ shifted forelegs alternately and nosed head & neck of ♀ often. ♀ several times turned head sidewise to nose foreleg of ♂. After about 10 min. ♀ rolled over onto side, ♂ backed part way off without standing up, ♀ rolled into prone position and ♂ climbed on again. They continued as before for 10-15 min., then ♀ again rolled onto side. This time ♂ stood up and walked around in front of her and faced her. ♀ then got into position again and ♂ walked behind, knelt, & climbed on again. They continued another 10 min., then ♀ rolled onto side and stood up. ♂ got up and ♀ ran with ♂ chasing for about 50 yd. Then ♂ stopped and ♀ continued to walk away. When she paused ♂ started toward her but stopped again as she continued to walk away. She kept walking north across mouth of E 138.2 Draw past Rocky Hill, and finally out of sight.

M. Koford
1952

Vicugna

March 20 Huaylorco

up E 138.4 Draw. ♂ started back toward ♀, stopping often to watch ♀ and once running in her direction when she stopped (about 100 yd. from him). When he got back to about 50 yd. from the ♀ he began to graze. They had paid no attention but now they moved toward him and all grazed together. In E 137.5 Draw about 22 (♂♂?). Back to camp at 6 pm.

March 21

Drove up road 10 am. At 137.8, 7 above road. At 138.2 4 above road. At 138.7, ♂♂ in stream bed. At 139, 8 A, 2 J above road (their ♂ may have been chasing the ♂♂ at 138.7 as there seemed to be one chasing them). Across Stream, 6 A, 4 J. The ♂ was a little separate downstream watching ♂♂.

March 22

Drove up 4:30 pm 134 to 139. 12 ♂♂ on left at 135. 6 in mouth of E 138.2 Draw.

April 1

Drove down from 142 at 3:00. Stopped at broken bridge for ½ hour. None in sight from here. 8 A, 1 J came over ridge between the 2 draws E of road, saw me, returned over ridge. From K 139 I could see at least 9 A with at least 3 J ^(2 nursing) (some maybe out of sight) at upper end of green part in right (main) draw. 200 yd. above them on hill were 3 A.

M. Kofod
1952

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Vicugna

April 1 Huaylarco

Up left draw were 4 A. While I watched 6 A, 4 J appeared at broken bridge, crossed stream and began to graze. Meanwhile the 4 A (♂♂?) had left at their approach, crossed main draw, & continued down stream. Just before 6 A, 4 J appeared, road crew had walked up road. Around K 137 were hundreds of sheep. At K 135 1/2 ^{up} 7 A, 2 ^{prone} J across stream. At K 134 lone one ^{of south} ~~left~~ of road. At K 133 at far edge of green flat ^{south} of road, 14 A, 9 J, 3 juv. nursing when I first looked. 100 yd. toward lake is ~~to~~ another lone adult. 5 minutes later, 7 juv. ^{prone} ~~lying down~~, 2 grazing, all adults grazing. Returning to camp saw 4 adults - maybe ♂♂ - in E 138.2 Draw. At 138.7 on ridge top above road at least 5 A with at least 2 J. At 139, 4 ♂♂ just below road, adult above road running back over ridge toward group I just saw on ridge top - I think this one had short left ear - probably this was ♂ of group on ridge top which had just chased 4 ♂♂ below road. 4 ♂♂ now chased by ♂ of 6 A, 4 J across stream. The 6 A, 4 J are now at mouth of main draw. Up draw, where 9 A, 3 J were at 3:45 are now (5:15) 3 A.

M. Koford
1952

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Vicugna

April 1 Huaylarco

The 4 juveniles are 1 nursing, 3 running about. ^(Sun has set.) 2 juv. wrestled with necks, then one climbed on other's back in manner of initiating copulation. One adult ♀ still looks pregnant.

April 5

At 1 pm drove up from 137. At 138.7

4A, 1J above road, 7A across Stream.

In E 139 Draw 13A, 5J. One of these adults lying down with tail sticking out. Tail jerked occasionally. After 5 minutes got up & grazed. This and at least 2 others look pregnant. 3 adults farther up draw. In Broken Bridge Draw 6A, 4J. A condor lit on hillside above them. One of them ran toward it and it flew but I don't know which vicuña it was. The ♂ did three "wolf howls" on pile after 2 ♀♀ had gone. He curled back lips and his head trembled as he held it up.

On W 139.3 Draw are 2 adults, one with light line on sides. While I watched

8A, 4J came over hill, down W 139 Draw, across road & Stream and over hill above the 13A, 5J. None of these 8 adults acted like a ♂ and as they went over the hill they were being chased by several

M. Koford
1952

Vicugna

39

April 5 Huaylarco

others. At least 4 extras were running around them with tails up and all seemed to be chasing each other. They all disappeared over hill just south of E139 Draw. One of extras may have been ♂ of 13A, 5J. Others may have been ♂ band. Later there were 5 adults up the draw^{E139} where there had been 3. Now the 7A from 138.7 ran upstream and over hill south of E139 Draw. A shaggy black dog walked up road. 13A, 5J disappeared up E139 Draw. 6A, 4J ran up to top of ridge north of E139 Draw. Dog paid no attention. I drove back down road. 16 adults on E138 Flat. At 133 big bunch still out on flat but I couldn't count because it is snowing and most were lying down. Drove back up to 139 and waited for snow to stop. 6A, 4J are now (3:30) in mouth of E139 Draw. Adults are up (is snow storm), juveniles down. Snow stopped at 4:00 and I could see another group of 11A, 4J only about 50 yd. up draw from the 6A, 4J. All the juveniles ran about together and for about 15 minutes 7 of the 8 were with the 6 adults. When I first looked

M. Koford
1952

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Vicugna

April 5 Huaylarco

there were only 10 adults in the upper group and the ♂ of the 6 adults was missing. Then 2 ran down the hill, the ♂ of the 6 chasing another which joined the group up the draw, making 11 adults.

Another adult came down the draw, stayed with the 11 A, 4 J for a few minutes, then came down past the 6 A, 4 J. ♂ of 6 chased it toward road. I then noticed just across road at 139 6 A, 1 J. One of these might have been the one just chased that way by ♂ of 6. ♂ of 6 then chased out 5 adults which ran into Broken Bridge Draw from upstream.

He then ran up and chased the 11 A, 4 J a little upstream. None of them acted like a ♂. At 4:30 snow started again.

April 6

9:30 am In W 139 Draw 6 A, 1 J. In E 139 Draw 6 A, 4 J. 30 yd. up draw 10 A, 3 J.

At first upper group was only 9 A and one of the 6 A was up near them. Then another came down the hill. 2 adults of 9 went to meet it with tails raised. It ran down into the group and the one from the 6 ran back to its own group.

10 in upper group grazed quietly together. Their 3 J came down and joined the 4 in lower group.

M. Koford
1952

Vicugna

41

April 9

Huaylarco

8 am From 137 drove down road first. At 135 1/2 7A, 2J across Stream. (Road workers at 136.) At 133.2 1A lying prone ^N of road. At 133 1A, 1J ^S of road at far edge of green near sand ridge - may have been more behind ridge. Drove up road.

At 138 ♂ with 3 yearlings above road. at 139.2 6A, 4J in broken bridge draw, 2A across road. One of these is ♂ with light lines on sides. Other is adult ♀. ♀ defecated & urinated on pile, then ♂ went to pile, sniffed long at the spot, then gave "wolf howl" with teeth bared. Repeated two more times. Then worked forefeet up & down on the spot & defecated; sniffed again, tramped again, stood but didn't urinate, & walked off.

Up E 139 Draw are 10A, 4J. Drove back. At 138.9 ³ (♂♂?) above road. At 137.6 4 (♂♂?) above road. 3 (♂♂?) in E 137.5 Draw. Started watching the 7A, 2J at 135 1/2 at 9 am. 9:00 ♂ to pile. 9:08 paler juv. prone, still grazing. 9:10 all grazing again. Walked behind hill out of sight & I left. 2A in E 138.4 Draw. 1A across Stream at 138.8. At 138.9 7A, 2J above road. 6A, 4J in Stream just below Broken Bridge. 2A still across road.

M. Koford
1952

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Vicugna

April 9 Huaylarco

Recorded
everything
for this
group for
next
3 hours

Started watching CA, 4 J at 9:45. All grazing.

9:55 1 juv. prone, then on side with head up.

9:59 up. 10:00 1 (same?) juv. prone. 10:05 all

up. 10:08 3 juv. to pile. 10:09 1 juv. nursed. Another started 15 sec. later.

juv. to pile. 10:11 1st stopped nursing - tried to continue but mother kicked and walked away. 10 sec. later second stopped nursing, apparently of own accord.

juv. to pile. Adult to pile. 10:14 juv. prone.

10:15 another juv. prone. 10:16 one up and nursed 2½ min., quit voluntarily.

Mother to pile, then another adult - 10:22

^{all up}
All watched something upstream. juv. nursed 2 min., then mother walked away. 1 juv. prone again but up almost immediately as man walked down road. One gave alarm and they walked a little away.

They could not see him until now ^(10:25) & earlier behavior perhaps from behavior of other vicuñas upstream.

10:30 2 juv. prone. 2 ad. & 2 juv. rolled.

10:31 another juv. prone. 1 ad. prone.

10:32 2 juv. up. 10:34 came 2 prone again ^{then on sides.}
(3 juv. now ^{down} prone) 10:36 prone ad. rolled &

lay on side (head up). 10:40 ad. up.

Juveniles 2 prone, 1 on side. 10:41 3 juv. prone.

M. Koford
1952

43

Vicugna

April 9 Huaylarco

10:47 ad. prone. 10:50 1 juv. up as ear passed, then down again. 10:52 4th juv. prone. 11:58 ad. up; then ♂? began chasing one - I think the one that just stood up - chased it back and forth several times thru the group, ~~then chased~~ then chased 2 others briefly. The juveniles all up as chase passed them. 3 juv. to pile. 1 juv. prone 11:02 to 11:07. 3 juv. & 1 ad. rolled. 11:10 3 juv. prone. 11:13 all up. 11:14 2 down again. 11:15 another juv. down. Ad. to pile. 11:18 4th juv. down (3 prone, 1 on side) Ad. to pile. 11:23 2 juv. on side, 2 prone. All adults still up. 10:25 all juv. up, 1 down again, 1 nursed 2 min., then ♀ walked away. All juv. down briefly, then up, alternately for ^{next} 10 minutes, usually 2 down, 2 up. 1 juv. to pile - I saw feces drop - usually haven't been able to tell. The group is now in the E 139 Draw. The ♂ of the group farther up the draw came toward them. ♂ of G went toward him, went to pile, gave wolf howl. 1 juv. to same pile. All juv. now up & ran toward strange ♂ who retreated toward his group.

M. Koford
1992

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Vicugna

April 9 Huaylarco

all 4 juv. ran to other group (out of my sight). The ♀♀ didn't seem to notice absence of juveniles. 11:50 ♂ prone. 12:00 ♂ up. 12:05 1 ad ♀ prone. 12:07 4 juv. ran down draw, followed part way by an adult. 4 juv. returned to group (after ½ hour absence) 12:10 1 adult went to juveniles, nosed one - it wagged tail and arched neck - then this ♀ walked toward 2 other juveniles. One of them ~~walked~~ ran to her and nursed. One minute later another ran to an adult and also nursed. 1st nursed 2 minutes, then ♀ walked away. 2nd nursed 2½ min., then ♀ walked away. 12:17 ad. to pile. 12:20 prone ♀ ~~up~~. ♂ followed her, stopped at a pile & wolf howled. ♂ from up draw came again & stood near. 12:23 juv. nursed 2½ min. Group from up draw followed this ♂ down. 3 of juv. came down & joined the 4 in lower group. ♂? chased them out. All grazed. 1 juv. in group above stays near adult which is apart from rest of group. 12:45 All still grazing when I left.

M. Koford
1952

45-

Vicugna

April 10 Huaylarco

2:00 pm 138.8 2A across Stream. 1 prone.

138.3 1A by Rocky Hill. 133 5A, 1J
- adults up, juv. prone, then up. To left
of these 16A, 9J - adults all up, 6
juveniles down, then one of these up.

135½ 7A, 2J across Stream. Started
watching these at 2:15 - adults up,
juveniles down - 1 prone, 1 on side.

Recorded
everything
for this group
for next
2½ hours.

2:22 ad. to pile. One juvenile is paler
and taller than the other. Smaller has
more of brown color of adults. 2:30
dark juv. up. 2:37 light juv. up as
group walked away from it. 2:41 light
one down as group stopped. ad. to pile.

2:42 light one up as group walked again.

2:44 " " down " " stopped " "

2:45 dark one down (both prone)

2:55 5 adults rolled. 3:00 ad. to pile,
2 ad. rolled, 1 stayed down on side (the
one that just went to pile). 3:04

another adult rolled. 3:10 ad. on side up.

2 juv. up & joined group which had
moved 200 ft. away from them. All
moved to Stream and most or all of
adults drank - juveniles didn't.

3:30 Ad. rolled. 2 juv. to pile. 3:40

dark juv. down. 2 ad. to pile. 3:42 light

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1952

Vicuña

46

April 10

Huaylarco

juv. down. Ad. to pile. 3:45 Dark
juv. nursed $2\frac{1}{2}$ min. (up at 3:43 +
nursed the adult grazing nearest it).
2 ad. to pile. 3:47 dark juv. down
again. 3:57 light juv. up. 4:00 light
juv. prone again. 4:05 light juv. up and
grazed by an adult. 4:17 dark juv. up.
4:18 light juv. nursed adult it had
been with since 4:05 - nursed 2 minutes
or slightly longer. 4:20 dark juv. down
again. 4:22 light juv. down. 4:24
dark juv. up. 4:29 dark juv. down.
4:31 light juv. up & to pile. 4:35
light juv. down - both juv. feeding
while prone. Adult to pile. 4:39 both
juv. up. 4:45 ad. to pile. Light juv.
down for 1 min. 4:48 When I left,
all grazing, sun still on them. Drove up
to 139. 2 A in ^{E 138.4} ~~W 139.3~~ Draw - both
grazing - sun still on them. 3 A across
Stream at 138.7 - also still in sun &
both grazing. 7 A, 2 J in W 139 Draw
- already in shade, all up. 6 A, 4 J in
Broken Bridge Draw - also in shade &
all up. 2 A in W 139.3 Draw - both up,
already in shade. 11 A, 4 J up E 139 Draw
- still in sun - 2 adults prone, 2 juv.

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Vicugna

April 10 Huaylarco

prone, another juv. lay down prone.

One of the prone juveniles is very new. It is lying near the 2 prone adults. It's fur is still dark with light blotches on the back. The shade has now reached this group. All are up but one juv. (this one near an adult a little apart from group). The new juv. ran when chased by another juv. but looked a little unsteady. It then lay down again and one adult also lay down. The 4 juv. in the 6A, 4J are now gambling. (5:15)

April 13

Drove up at 4:30 pm from 137 to 139. 6 in E 138.2 Draw. 3A across Stream at 138.9. 7A, 2J in W 139 Draw. 2 groups in E 139 Draw. 6A in lower group, 11A in upper group. Juveniles are mixed - 7 in lower group (3 I assume from upper) and 2 in upper group - one of these a very young one. All in all groups are up & grazing. (4:40) 4:45 another juv. has returned to upper group. One is nursing. Youngest is lying down. One juv. down in 7A, 2J. 4:48 1 juv. nursing in lower group in E 139 Draw. Sun setting on W 139 Draw - 1 juv. still down here. 2 juveniles

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1952

Vicugna

48

April 13 Huaylarco

in lower E 139 Draw, wrestling with necks, one trying to mount other from rear. Then 3 more juveniles joined in gamboling.

Youngest juvenile in upper group is still only one lying down. Chase between two adults in upper group. ♂? chased ♀? away from group and back again.

Several times "he" stopped and each time "she" stopped and walked a little toward him, then he started chasing again. Stopped suddenly & began grazing.

Sun has now set on ^{lower group} ~~them~~. Juv. is nursing in upper group. (5:00) 2 juv.

from upper still with lower group. All up but youngest juv. in upper group.

All up in W 139 group. Another chase in upper E 139 group. After chase, the 2 stood with heads high, ears back, tails out, at least one making fighting noise.

♂? walked away and toward other group, shook head several times, walked back.

5:10 sun set on upper group. 5:15 youngest in upper group nursing. Chase again in upper group - ran out of sight up draw after chasing about 100 yd. still in sight. ♀ from upper group ran towards lower group. Two juveniles from lower group ran to her and

M. Koford
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Vicugna

April 13 Huaylarco

then on up to upper group. ♂ of lower group chased her, then continued to chase all the ♀♀ in upper group. ♂ of upper group returned from up draw and chased out ♂ of 6 who ran back to his group and chased them a little. 5:25 2 juv. in upper & 1 in lower group nursing. 1 juv. down in lower group. 5:30 1 ad. down in W 139 group. Still 1 juv. down in lower E 139 group. Youngest down in upper E 139 group - only 9 adults in sight - ♂ may be off chasing one again. Now whole group moving up draw to left and out of sight.

April 16 at 3:30 drove from 137 to 139. Road men working at 138.8 & only vicuñas were 71, 25 W of road at 139.1. Drove down to 134.8 and watched 144, 85 ♀ of road. 2 juveniles prone each near an adult, one of them quite young. Another very young juv. following an adult. The other 5 juv. grazing together. All adults grazing. at 3:45 the youngest prone juv. stood & ran a little as a truck passed, then lay down again. The other prone juv. stood up, walked over and sniffed the younger one, then followed adult. The other very young juv.

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Vicugna

50

April 16 Huaylarco

now lay down. The older one following adult tried twice to nurse but adult continued walking. This one looks older than two prone juveniles but younger than the 5 grazing together. It ran up to prone one (the one which most recently lay down) and the smaller one stood & ran. Its mother followed and nosed it (the smaller one), then (3:55) it nursed $2\frac{1}{2}$ min. The group has now moved about 100 yd. away from the other very young one and its mother. This juv. is still prone. Truck stopped and men got out and ran after vicunas. They ran between separate pair and rest of group. The group ran across the road and away to ~~west~~^{north}. Separate adult & juv. ran to join group and ran near some of men in doing so.

April 17

At about 9 am drove down road from 137. Only vicunas seen were 22 or 23 ^N of road at 131. Turned around at green patch at 127.5. Could see 1 mi. in every direction and no vicunas. When back to 130.5 saw 2 groups. 100 yd. ^N of road at 130.8 were 2 A, 1 J. Another adult was 100 yd. other side of road. ⁴ ~~mi.~~ ^{mi.} from ^{ES} road were 8 A, 3 J. These would

M. Koford
1952

Vicuña

51

April 17 Huaylarco, 52 mi. ENE Arequipa, Peru
have been out of my sight as I drove down. Their ♂ was interested in something out of my sight to ~~east~~^{east} ~~south~~. The 3 juv. were prone & 1 ad. prone near one juv. The 2 A, 1 J ^N of road now crossed road and joined adult there. One of the adults is a yearling. They all continued away from road toward other group until about 300 yd. from road. Then ♂ of 8 A, 3 J ran all the way to them and ran after them back across road and at least $\frac{1}{4}$ mi. ^N of road until out of my sight. Then he ran back all the way to his group. I drove out toward his group until I could see what he had been watching before. He now went $\frac{1}{2}$ mi. to ~~east~~^{east} ~~south~~ of his group to chase 22 ♂♂. 3 of adult & the 3 juv. in his group are prone. In a green draw $\frac{1}{2}$ mi. beyond ^{#5} them there are alpacas grazing. I went back to road and measured tracks of running in sand. 2 alpacas ^N of road at 133. Group ^N of road at 134 $\frac{1}{2}$ - only could see 10 A, 7 J.

~ End ~

KOFORD, CARL

PANAMA, PERU, CHILE

FEBRUARY 1951 - NOVEMBER 1952

CATALOGUE NOS. 909-1700

JOURNAL

* SPECIES ACCOUNTS

BIRDS

MAMMALS

* not included in this volume

CATALOGUE

1951

Specimen Catalogue
PanamaFebruary 23, 1951 Laboratory Buildings, Barro Colorado Island, Panama Canal Zone.909 ♂ testis 4 mm. long Myotis nigricans 82-37-8-13910 ♀ 1 emb, ut. swell. 20x13 Myotis nigricans 82-36-9-13911 ♂ testis 4 mm. long Myotis nigricans 80-37-8-13

909-911 taken at midday under eaves.

February 25, 1951 Nr. Laboratory, Barro Colorado Island, C. Z.912 ♂ test. 8 mm. long Frithraupis ~~canq~~ episcopus

February 26, 1951

~~913~~ Van Tyne trail, Barro Colorado Island, C. Z.913 ♀ ^{largest ovum} ~~AT~~ ^{1/2} mm. Microhapias quixensis

In tree, 30' above ground, dark woods.

~~914~~ Thomas Barbour trail, mark 9, Barro Colorado Island, C. Z.914 ♂ test. 1 mm. long. Epidonax viridescens

In large bush in dark jungle

Big Tree, Van Tyne trail, Barro Colorado Island, C. Z.915 ♀ 1 emb, ut. swell 11x7 mm. Saccopteryx ^{bilineatus} 77-21-12-16-330 wgsd.916 ♀ 1 emb, ut. swell 9x6 mm. Saccopteryx "

(near Casa Larga)

February 27, 1951 Chilibrijo Caves, Canal Zone Republic of Panama917 ♂ test. 2 mm. Saccopteryx ^{bilineatus} 70-19-11-16918 ♂ test. 4 mm. Louchohylla robusta red-long tongue-bat - 8 - wgsd. 82-12-13-17-305

919 ♀ no emb. " " 77-8-13-17

920 ♂ test. 2 mm. " " 80-9-13-18

921 ♂ Desmodus rotundus 70-0-18-19 1mm: wgsd.922 ♂ Phyllostomus hastatus 150-25-23-32-650

923 ♂ test. 7 mm. long. " " 152-23-24-34

924 ♂ test. 8 mm. Desmodus rotundus 82-0-17-19925 ♀ no emb. Desmodus " 83-0-19-20926 ♀ 1 emb, C-R 21mm. Carollia 74-10-15-21

1951

Specimen Catalog
Panamá - Perú

- February 27, 1951 Chilibrillo Caves [near Casalarga], Republic of Panamá ^{ugspd.}
927 ♀ 1 emb., C-R 24 mm. Carollia 69-8-14-21-340
6 miles NW San Antonio, Dpto. Lima, Perú
- March 17, 1951 [kilometer 78, Carretera Panamericana, S. of Chilca, Lima] Perú ^{Dpto.}
no emb.; mamm. not ext.; 5 scars L. horn ut. ^{ut.}
928 ♀ Phyllotis? Oligoryzomys? Phyllotis amurensis? 181-98-23-21-17½
- Flatsandy ground under 6x6x3' (high) broad leaved yellow-flowered bush
March 18, 1951 ^{Dpto. Ica,}
3 miles E. of Mr. Pisco, Perú
test. scrotal, 6x4 mm.
929 ♂ Mus musculus 146-75-18-14 -13.2g.
- Hard sandy ground between 3' high mounds bearing coarse grass.
vulv. imp., ~~min. elong.~~, lact. ut. swell. 4R, 2L horn, 2mm. diam.
930 ♀ Mus musculus 173-91-18-16 -18.7g.
- Same as ♂ 929, 20 ft. distant
- March 19, 1951 3 miles w. Atico, Prov. Caraveli, Dpto. Arequipa, Perú. ^{50' elev.}
test. 14x6 mm. ^{100 chiggers, red, in ears.}
931 ♂ Phyllotis darwini? 259-138-27-28 -49½g.
test. 6x4 mm.
932 ♂ Phyllotis 237-125-24-28 -38½g.
^{150 yds. from edge of ocean.}
- Dry barren sandy ground near clefts in large boulders & rock outcrops,
- March 18, 1951 Punta de Lobos, nr. lat. 16° S, Dpto. Arequipa, Perú.
933 Liolaemus? Under rock 100' from edge ocean on rocky shore.
- March 25, 1951 Selva Alegre, Arequipa [city], Perú
934 Bufo
935 Bufo
- Under rocks near building (patio of Hotel Arequipa)
[Ar. Laguna Salinas, 50 miles E. 10 mi. N. Arequipa,
April 6, 1951 Solitaria, 13500± ft., Dpto. Arequipa, Perú.
test. 16x10 mm.
936 ♂ Lagidium peruanum 575-255-90-66 -1100 gms.
among broken volcanic rocks of hill.
- April 7, 1951
937 ♂ test. 10 mm. long. ^{Femil, slt bill, yellow breast & rump, gray back & wings.} 24½ gms.
938 ♂ test. 7 mm. ^{Femil-like, dark gray back, light gray breast & supercilary line.} 12½ gms.
939

1951

Specimen Catalogue
PERU

April 6, 1951 2 miles E. Laguna Salinas, Dpto. Arequipa, 13500± ft., Peru

936 ♂ test. 16x10 mm. Lagidium peruanum 575-255-90-66-1100 gms.
among broken volcanic rocks of small hill.

April 7, 1951

937 ♂ test. 10 mm. Sicalis uropygialis 24½ gms.
Finch-like, dark gray back, light gray
breast & superciliary line
938 ♂ test. 7 mm. Phrygilus plebejus 12½ gms.
Brown-dk. back, light below, long bill,
tail, sh. wings
939 ♂ test. 2 mm. Sinclairia Asthenes modestus 18 gms.

937-939

On or adjacent to igneous rocks of small hill.

cull only 940 ♀ 1 emb. 270-127, wt. 110, haired. Lagidium peruanum 1750 gms.
no emb. scars; ov. tiny.

cull only 941 ♀ some luteal tissue; " " 1400 gms.

April 8, 1951 Tincopalca, 50 mi. W. Puno, Dpto. Puno, 13500± ft., Peru

Not saved 942 ♂ P. cristata 1200 gms.
Large duck - brown back & breast; dk. gray wings, white p. on propinal
lining; hd. gray with fine specklings; purple speculum with white distal bar,
orange eyes, gray legs & feet. Darker line thru eye
943 ♀ largest Phalaropus lobatus or albobularis m. 900 gms.
ova 2 mm. waxy on road. Small toad in throat. Black beetles in stomach

944 ♂ test. scrotal, 13x7 mm. Akodon boliviensis 748-63-20-14-25 gms.

Next to hole in ground under low brush next to grassy area, 25' from stream.
942 ♀ ova ½ mm. Geopelia cunicularia wt. 26 gms.
Dk. brown above, light below. Rusty secondaries.
light rump & band across very sh. tail.
Ground in flat brush; common bird.

33 mi. W. Puno, Dpto. Puno, 14000± ft., Peru [Km. 88 on road]

945 ♂ test. 3 mm. Sporobolus cunicularia juninensis 210 gms.
Flat grassland, on ground.

10 mi. W., 4 mi. S. of Vilque, Dpto. Puno, 14000± ft., Peru [Km. 60 on rd.]

946 ♂ (r. small) Nethepasta ornata 700 gms.
test. 17x9 Tinamous; green seeds & leaves in crop
On edge road, steep brush grass slopes. brood patch 55x40.

April 13, 1951

Hacienda Pairumani, 24 mi. S. Ilave, Dpto. Puno, Peru. 13000'

947 ♀ vulv. imp., nip. 1 mm. long; Akodon boliviensis 156-62-20-16-34 gms.
vt. swell, 4L, 2R, 2x3 mm. [apparently lactating]

948 ♂ test. 7 mm. Gymnopelia ceciliae 59½ gms.
Nest to stone wall in tall brush grass.
Dove, orange chin around eye, some white
feet on wings.

April 13, 1951/949 ♀ vulv. per f. Phyllotis pictus 210-91-26-21-32 gms.
nip. 2 mm. + vt. swell, 3R, 1L, 2mm. diam. Repro. tract saved

Caught at edge pile rocks in field of bunch grass.

1951

7

Specimen Catalogue
PeruApril 13, 1951 Hacienda Paitumani, 24 mi. S. Ilave, Dpto. Puno, Peru. 13000 ft.

- 950 ♀ vulv. pert. 2 mm. nips. 2 mm. 4 emb., 27x15, in R. horn. Phyllotis pictus ♀. Repro. tr. saved - 3 emb. 195-79-25-21-61 gms.

Base of 3' tall grass clumps by clear running stream; rocky area.

- 951 ♂ test. scrotal test. 10x7 Phyllotis pictus ♀. tested saved 193-86-26-21-47 gms.

Under rocks of rock wall on slope of bunch grass.

- 952 ♀ vulv. imp. nips. 2 mm; much lact. tissue no emb. Phyllotis osilae ~~or darwini~~ repro. tr. saved 225-120-26-22-40 1/2 gms.

Top rock slide at foot cliff; 2' from bush.

- 953 ♂ 2 min. test. 5x3 Phyllotis ~~osilae~~ osilae Fleas, mites saved. 185-45-26-20-25 gms. 1 mm.

2 similar discarded. Near stream; under overhang rock near grass + under tall bunches grass.

- 954 ♂ test. abd., 7x10. Akodon jelskii pulcherrimus Testes saved 190-85-25-21-35 gms.

10' from stream under overhang of rocky bank near clumps tall grass.

- 955 ♀ ut. enl., no swell. A. jelskii pulcherrimus repro. tract saved 180-79-25-21-37 1/2 gms.

6' from stream under 4' high clumps of grass, near rocks.

April 12, 1951 Quellacota, 35 mi. S. Ilave, Dpto. Puno, 13000 ft., Peru

- 956 ♀ ov. not cal. Flicker Colaptes rupicola puna 132 gms.

Shot by side of road in flat grassy plains area.

- 957 ♂ test. 2 mm. Erolia bairdii Baird sandpiper 46 gms.

One of about 6 on ground in short grass plain.

- 958 ♀ 2 emb., L. horn, 80 mm. C-R; nips. 5 mm. Canis Galea musteloides 225-10-40-19-360 gms.

Shot on flat plain of short grazed grass.

April 13, 1951 Hacienda Paitumani,

- 959 ♂ test. 13x8 mm. Akodon amoenus 163-66-20-14-29 gms.

Rock wall on bunch grass slope.

- 960 ♀ vulv. pert., wide hip. 2 mm; lact. tissue horn ut. 5 mm. wide A. amoenus 178-71-20-15 -35 gms.

Foot of boulder where overhang made dark passage with adjacent bunch grass.

- April 14, 1951 961 ♂ test. scrotal, 10x6 mm. Akodon boliviensis 162-62-19-15-33 gms.

Base bunch bunch grass, 2' from base boulder on slope.

Specimen Catalogue

April 17, 1951 Hacienda Pairumani, 24 mi. S. Ilave, 13000 ft., Dpto. Puno, Perú.

977 ♂ test. 4x2mm. Phyllotis pictus 181-76-24-21-35gms.

Base of rock wall on gentle slope of bunch grass.

April 18, 1951 Quellacota, 35 mi. S. Ilave, 13000 ft., Dpto. Puno, Perú.

Emb. 2L, 1R, 55mm. C.R. ♀ vag. perf.; hip. 3mm. Ctenomys peruanus 299-89-40-12-415gms. ^{♀ Ovaries saved} mod. fat

Shot on pampas at marsh human; much ^{grazed} flat grassy area. ^{fat}
979 ♂ test. 21x11 (saved) Ctenomys peruanus 308-83-41-13-550gms

Same as 978.

Hacienda Pairumani, 24 mi. S. Ilave, 13000 ft., Dpto. Puno, Perú.

980 ♂ test. 18x9 Felis colocolo 815-275-125-56 - 3½ Kg.

Marsh of hole in rocks on ledge cliff 10' from site capture Conspicuous.

April 19, 1951

981 ♂ test. 26x20 Grisonella 570-145-70-27-1700gms. ^{testis saved}

Shot at t.p.m. in bunch grass at base cliff on steep slope.

April 20, 1951

982 ♂ test. 7x5 Neotomys ebriosus vulturinus 191-80-23-17-43gms.

Shady spot under big rocks on dry grassy-rocky slope.

983 ♀ Emb. 1L, 4R, 27mm. Akodon boliviensis 178-70-21-16-46gms. ^{vag. 1mm; hip. 2mm.}

Base boulder, steep rock grass slope, close to Baccharis & grass.

984 Liolaemus multiformis?

Rocks of dry rocky-grassy slope.

April 21, 1951

985 ♂ test. 5x3 Phyllotis ositoe ac dunnian 211-114-26-22-27g.

Foot cliff protected by tall bunch grass.

986 ♂ test. ^{scrotal} 13x7 Phyllotis p. psilae 259-128-26-24-60gms.

Under boulder, steep dry rock-grass slope.

987 ♀ Emb. 1L, 5R. long 15mm. C.R. Phyllotis p. psilae 249-124-26-23-58gms. ^{Nipples 4mm.}

Under boulder, steep rock-grass slope, 200' above stream.

Specimen Catalogue

April 21, 1951 Hacienda Pairumoni, 24 mi. S. Ilaue, 13000 ft., Dpto. Puno, Peru
 988 ♀ no emb.; ut. horn firm back broken
 4 mm. wide; nip. 3 mm. Phyllotis 257-127-27-23-54g.

Base cliff near tola & bunch grass, steep dry slope.

989 ♀ vag. imp.; nip. 3 mm. - last. tiss. Akodon jelskii pulcherrimus
 + no emb. ut. sc. - 2R, 1L. 192-85-25-21 - 41gms.

Near bunch, flat ground, foot cliff; dry steep ridge.

990 ♀ vag. imp.; nip. 2 mm. Akodon berlepschii
 + no emb. 3 ut. sc. R, 4L. horn. 156-59-19-15-22½gms.

Fairly open open spot at foot cliff where tola & bunch & bunch grass.

991 ♂ test. 17x13 Felis colocolo 810-290-125-53-3600gms.
 Rocky-grassy ridge near end of cliff; 200 yds. from water.

April 22, 1951

(tract saved)

992 ♀ no emb. or scars Felis colocolo 825-290-130-55-3300

Mouth of hole in base cliff, 100' from stream, grassy slope.

993 ♂ 9x6 mm. Neotomys ebriosus 181-66-22-19-53gms.

Base boulder on slope in dark passage formed by adjacent grass.

994 ♂ test. 14x10 Phyllotis darwini 251-123-27-27-62gms.

Under boulder on dry rocky-grassy ridge.

995 ♀ Emb-3R, 2L. horn, 32 mm. C-R Phyllotis silva 254-129-25-23-69g.

Under boulder on dry rocky-grassy ridge.

996 ♀ nip. 3 mm.; no emb. ut. scars. 2R, 2L. (black areas) Phyllotis silva 228-115-25-21-37gms.

Grass & rock dry slope, near boulder.

April 23, 1951

997 ♀ no emb.; ut. ent. nip. 2 mm.; last. tiss. Neotomys ebriosus repro. tr. saved
 195-71-22-19-65gms.

(same place as 993 ♂)

Base boulder in passage formed by adjacent bunch grass.

April 24, 1951 Puellacoto, 35 mi. S. Ilaue, 13000 ft., Dpto. Puno, Peru.

998 ♀ largest ovum 1 mm. Thiencorus dorbignyanus ingae 46gms.
 yellow legs, tan on back white belly, white thin skin, quail bill.

On pampas, walks much, flies slower-like.

999 ♂ On pampas among thorn bushes & bunch grass.

♀ ova ½ mm. Phryxolus plebejus 15gms.

35
6
210

Specimen Catalogue

Peru

April 25, 1951 2 mi. W. Santa Rosa, 10 mi. W. Mazacru, ^{14000 ft.} Dpto. Puno, Peru.
 1000 ♂ test. 11x9 Phyllotis darwini ^{tip tail skinned} 229-109-28-26-56 gms.

Shady spot under boulder on steep slope. Semen extruded.
 like 939. no tail bar. light bar wings
 + light suprac. line.
 1001 ♀ ov. not cul. Cinclodes puscus 27 gms.

Caught in snaptraps on shelf of cliff.

April 26, 1951.

1002 ♂ test. 10x6 Akodon berlepschii 172-71-22-15-35 gms.

Yellow chiggers in ears. Caught in day, traps near clumps grass + tola on gentle sandy slope.
 nip. 2 mm.; vag. perf.
 1003 ♀ no emb. - slight A. berlepschii 165-71-22-15-28 gms.
 ut. swellings.
 Tract saved
 Next to clump grass in sandy flat tola area.

April 25, 1951

(tract saved)
 1004 ♀ no emb. or ut. scars Desicion 1025-390-155-98-13/65.

April 26, 1951

top skull clear warm, brown, long tail
 1005 ♀ ov. not cul. Asthene ~~unpatti?~~ modesta 14 gms.

Snap traps on sandy ground among tola + clumps grass.

ut. scars 3R, 2L.
 1006 ♀ no emb.; nip. 2 mm. A. berlepschii 161-67-21-16-24 gms.
 rot vag. perf.

and Snaptraps in daylight by boulder, tola, clump grass, gentle slope.

April 27, 1951

10 mi. S. Mazacru, Dpto. Puno, Peru.
 skull only 1007 ♀ Conopatus Dead on road.
 680-275-80-25-61/65

April 28, 1951

Livine, 21 miles N.E. Tarata, 15300', Dpto. Tacna, Peru.

1008 ♀ largest ovum 2mm. Attagis gayi simonsi 335 gms

shot with 1009 near water, ichu grass + yarta rocky sidehill.

1009 ♂ test. 3 mm. long Attagis gayi simonsi 290 gms.

April 29, 1951

1010 ♂ test. 8mm. Chinchilla tail broken
 263-100-33-37-126 gms.

Sail at foot of slide of boulders. Many large fleas (saved)

Specimen Catalogue

April 29, 1951 Livinge, 21 mi. NE Tarata, D^{pto.} 15300', Dpto. Tacna, Peru.

1011 ♂ test. 30x18 abd. Lagidium 630-245-92-69-1600gms.

Shot at base slide of large boulders.

April 30, 1951

Lielacmus

1012

Sandy gentle slope under tala bush.

1013 ♀ no emb. ^{darwini?} Phyllotis sublimis 175-95-25-24-22gms.

On soil (sandy) next to rock, tala, yareta, on gentle slope.

1014 ♂ test. 3x2 ^{darwini?} Phyllotis sublimis 167-83-26-22-wt. 22

Sandy gentle slope, next to yareta + clump grass.

1015 ♂ test. 9x6 A. andinus 145-50-22-16-25gms.

On fine soil under boulder of rock slide, 100 yds. from base; small bunch near.

1016 ♀ no emb. ut. wall thick, 15 cur. tract saved nipples 3 mm; lact. tiss. Phyllotis darwini? 223-111-28-26-43½ gm.

Under edge boulder; rocky sandy gentle slope, some yareta.

May 1, 1951

1017 ♀ vag. imp. nip. 2 mm. no emb. ut. horn 25x3 tract saved Phyllotis darwini 218-111-27-26-45gms.

sandy On soil, fast rock slide, base yareta covered rock.

May 2, 1951 17 miles S. Mazocruz, 13500 ft, Dpto. Puno, Peru.

1018 ♂ test. 2½x1½ Akodon berlepschii 154-66-21-18-23g.

Flat rockless tala & bunch grass area at mouth two hole.

May 2, 1951

1019 ♂ test. 2x3 Phyllotis sublimis 123-41-20-20-19g.

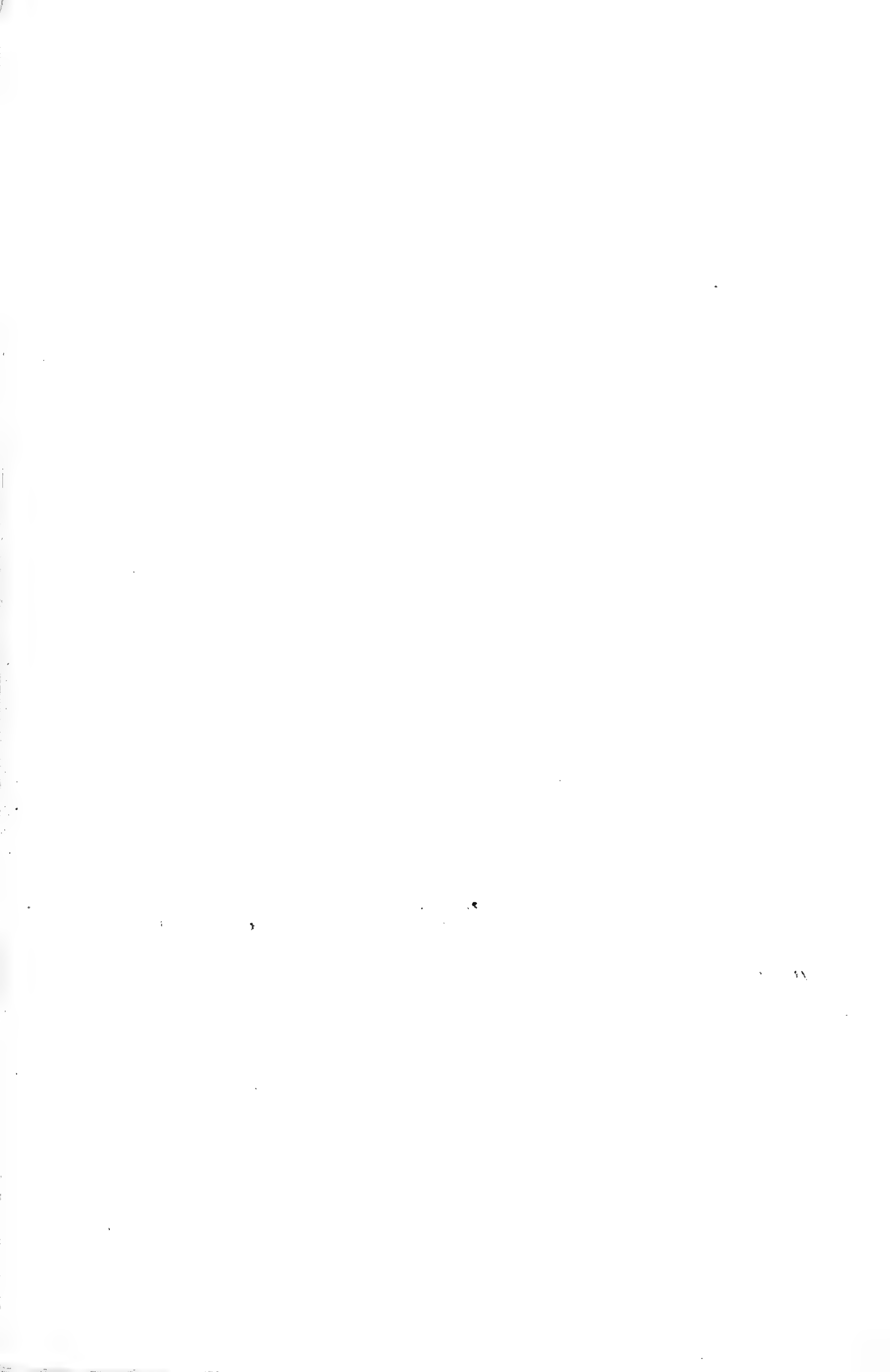
Under boulder near bunch grass on slope; 50 yds. from stream.

1020 ♂ test. 7x4 Akodon jelskii ochrotis 180-69-27-20-49gm.

20' from stream at mouth crevice in cliff of red rock; dark mouse.

1021 ♀ vag. imp.; lacteal tissue nip. 2 mm. no emb. tr. saved Phyllotis sublimis 177-53-22-25-55g.

Same place as 1018, at night.



Specimen Catalogue

May 2, 1951 17 miles S. Mazocruz, 13500', Dpto. Puno, Peru.

1022 ♀ or. not enl. ^{nestling} ^{acid; yellow breast, brownish grey} Sicalis uropygialis 17 gms.

^{freshly}
Found, dead below crevice in cliff 50' from stream.

1023 ♀ ^{vag. imp.; nip. 2 1/2} ^{vt. horn 22x3} Akodon jelskii ^{ochrotis} 193-84-25-20-45 gms.

^{no emb.; lact. tiss.}
trapped in daylight at mouth of old tucuman on tala flat 50' from stream.

May 3, 1951 Pasto Grande, 30 mi. W. Mazocruz, 15000', Dpto. Puno, Peru.

1024 ♂ test. 7x4 Phyllotis boliviensis 206-94-28-28-48 gms.

1024-1027 shot at midday next to road among boulders & tala and
shot in daylight near lake near rocks on + grassy (shot) ground.

1025 ♀ or vt. sci; ^{no emb. 1mm.?} Phyllotis boliviensis 182-77-28-26-44 gms.

1026 ♂ test. 7x5 P. boliviensis 206-89-29-28-58 gms.

1027 ♂ test. 4x3 P. boliviensis -56 gms.

May 4, 1951 Cacachara, about 24 mi. W. Mazocruz, 15700', Dpto. Puno, Peru.

1028 ♂ ^{Testis 4 mm.} ^{Breast molting.} Attagis gayi S. 285 gms.

Shot at midday on road in barren rock & sand area; companion flew.

May 8, 1951 To 10 miles SSE Juliaca, Dpto. Puno, Peru. 12500 ft.

1029 ♀ largest ovum 1mm. ^{andean quail} Larus serranus 350 gms.

May 10, 1951 Hacienda Calacala, 13000 ft., 7 mi. SW. Putina, Dpto. Puno, Peru.

1030 ♀ or. not enl. Zonotrichia capensis 27 gms.

Common on rock walls & in trees near buildings.

1031 ♂ test. 5x3 Phyllotis osilae 220-118-27-22-29 gms.

1032 ♀ ^{discarded} ^{46 mm. 32, 2 R., 3x3 mm. vt. horn 18x3;} Phyllotis - same as 1031. ^{1 swelling R. horn (3x3)} 26 gms.

May 11, 1951 Under bushes near rock walls in garden before 8 P.M.

May 11, 1951 1032 ♀ ^{vag. perf.; ut. swell. 32, 1} ^{1 R., 3x3 mm.; nip. 2 mm.} Phyllotis osilae 205-111-26-23 -31 gms.

^{Tract saved}
Under bush near rock wall in garden.

1033 ♀ ^{vag. perf.; nip. 1 mm.} ^{1 emb. each horn, swelling 11x9.} Phyllotis osilae 208-106-25-22 -30 gms.

^{Tract saved.}
Under same bush near rock wall in garden.

Specimen Catalogue

May 11, 1951 Hacienda Calacala, 13000 ft., 7 mi. SW Putina, Dpto. Puno, Peru.
 test. scrotal.

1034 ♂ test. 10x7 Phyllotis osilae 249-126-27-24-51gms.
 Test. saved.

Tall grass near rock wall & stream.

1035 ♀ ut. horn 30x5. Phyllotis osilae 247-123-26-24-49gms.
 Tract saved

Tall grass near rock wall & stream.

1036 ♀ vag. imp.; Akodon boliviensis 173-61-21-15-42gms.
 nip. 2 mm.; much lact. tissue
 Horn 25x1

Trapped in house. much lactated tissue. No ut. swell or scars.

1037 ♂ test. 7x1 Akodon boliviensis 183-78-22-16-48gms.

Caught during day under dense bush next to rock wall in garden.

1038 ♂ test. 10x7 Phyllotis osilae 259-134-27-24-55g.

Alongside adobe barn near green & cut grass.

1039 ♀ largest 1/2 mm. Falco femoralis pichinchae 400gms.
 ov. not enl.;

Shot in eucalyptus tree in ranch yard.

May 12, 1951

Emb. 3 R., 2 L. horn, 13 C-R
 1040 ♀ Phyllotis osilae 207-100-25-22-38g.

Tall grass near stream at base rock wall.

1041 ♂ test. 12x7 Phyllotis osilae 256-132-26-25-53g.

Tall clumps grass next to stone wall on moderate slope.

skin only 1042 imm. Mustela fasciata, skin obtained from Sr. Paredes
 Perez, caught about early March by Indian on the hacienda.

May 11, 1951

1043 ♂ test. 17x22 Conopatus 670-260-84-29-2900gms.

Trapped below garden among bushes next to stone wall.

May 13, 1951

prim. 9x10 shd., molt. small thresher
 1044 ♀ ov. not enl. Upucerthia validirostris jelskii 76gms.

Top of stone wall, grassy slope.

May 14, 1951

Tall grass on hillside.
 1045 ♂ test. 7x5 Hesperomys ? 147-66-18-19-16gms.

Specimen Catalogue

May 17, 1951 Hacienda Calacala, 13000 ft., 7 mi. SW Putina, Dpto. Puno, Peru.

1046 ♀ no emb.;
+ 1 art. *Phyllotis* ^{*osilae*} ~~*darwini*~~? 245-125-28-24-50 gms.
Nip. 3 mm.

alongside rock wall at edge grassy pasture. Repro. tract saved
in bottle Baum's
(with ♂, 54 gms + 8 gms, tot. length 245, test 11 x 8)

May 18, 1951 11 miles ESE Crucero, 1314000 ft., Dpto. Puno, Peru
^{white belly, tinamous-like look}

1047 ♀ imm. juv. *Thimocorus orbignyianus* 80 gms.

Like ♀ 998. Two smaller young seen; one swam when alarmed. Common on
it froze on open ground.
short grass plains. Runs much. This one could hardly fly; caught by hand when a

May 19, 1951 Hacienda Calacala, 13000 ft., 7 mi. SW Putina, Dpto. Puno, Peru.

1048 ♂ juv. test. 2 1/2 long. *Nothura agassizii* 63 gms.

Caught by hand in grass near houses.

May 20, 1951

^{Brown men, pale supercilious line.}
1049 ♂ test. 4 x 2 *Troglodytes musculus puna* 13 gms.

Call tree in garden, singing loudly.

^{Black + yellow finch.}
1050 ♀ ov. not ent. *Spinus atratus* 17 gms.

This or other same kind has nest with nearly fledged young under ^{lower} eaves of house. "Tilgueto"
house. Shot in call tree in yard. Breast naked; broad patch?

^{Bare, white blend}
1051 ♂ test. 10 mm. *Metriopelia melanoptera m.* 81 gms.

Yd. yard of houses; common; much fluttering, killing, fighting between.

May 25, 1951 8 mi. SSW Limbani, 14915000 ft., Dpto. Puno, Peru.

1052 ♀ ut. horn not ent.; *Phyllotis* ^{*gublinus*} ~~*putina*~~? 154-55-23-22-31 gms.
no emb. or scars

Mouth hole under rock, gentle slope, short grass. Orange chiggers in ear +
at clitoris. Stomach with contents 7 1/2 gms, green.

1053 ♂ test. 5 x 3 *Phyllotis* ^{d?} ~~*osilae*~~? 205-109-28-26-33 gms.

Among rocks, brush, grass, on moderate slope.

1054 ♀ nip. 2 mm.
vag. imp.
much lact. tissue *Phyllotis darwini*? 234-115-28-29-52 gms.

ut. horn 23 x 2, 3 white scars R., 1 L.

Rock wall on gentle short grass slope, 50' from pond.

63

4

3

2

1

Specimen Catalogue

15000 ft.,

May 25, 1951 8 mi. SSW Limbani, Dpto. Puno, Peru

1055 ♂ test. 12x8 Phyllotis darwini? 253-126-28-30-62gms.
semires. 17 long. white cervical warts

Base cliff among rocks, grass, yellow flowered bushes. in olden. cavity.

1056 ♀ juv. Phalco boenas 600 gms.

Shot while feeding on detached leg of vicuña.

1057 ♂ test. 1mm. skull opaque mod. fat Muscisaxicola cinerea 22gms.
saddle color; light gray breast, gray back, brown prim. & sec., black tail edged lighter.

Common on rocks on open short grass gentle slopes.

1058 ♂ test. 5x2 Attagis gayi 290 gms.
same as 1058

1059 ♀ 1st. ovum 1/2 mm. Attagis gayi 355 gms.

1058+1059 shot together on flat near pond & rocks at 15500'

May 26, 1951

15500 ft.

1060 ♀ no emb.; vag. imp. ut. horn 15x 1/2 Akodon jelskii cruceri 163-75-25-20-24gms.
some fat

Under edge boulder on mass, 15' from lake, at foot rock slide; meat bait.

1061 ♀ tip, inconspicuous Akodon jelskii cruceri 183-83-25-21-30 1/2 gms.
test. 2 1/2

Inside stone shelter, 50' from lake; meat bait.

May 27, 1951

15500 ft.

1062 ♀ v. imp. ut. horn not cal. fat in broad lig. mod. fat mouse. Akodon jelskii cruceri 173-75-23-20-29g.
Foot rock slide near lake; may say?, white forehead

1063 ♂ test. 3mm. Muscisaxicola albigens 62 gms.
Walking on damp grassy ground near water.

15250'

1064 ♀ v. perf. nip. 1 1/2 Phyllotis d.? 244-121-29-29-52g.
ut. horn, 1 swell. L., 2 R., 3x4mm. Tract saved
Under boulder next to grass, 100' from lake.

1065 ♀ ov. not cal. Asthenes plannidata? 23 gms.
long tails, un-ble, brown, streaked
Under short monkey tail. hill.

In snap trap on rocky-grassy slope near lake.

15000 ft.

Toad

1066

Toad

1067

Under rock on well drained short grass slope.

Specimen Catalogue

May 28, 1951 8 mi. SSW Limbani, 15500 ft., Dpto. Puno, Peru.

- 1068 ♀ ^{vag. imp.} nip. 1½, black Akodon jelskii ^{cruceri} 197-87-25-21-41 gms.
lact. tissue
ut. horn 25x2
On moss under edge boulder at foot rock slide 25' from clear lake.

May 29, 1951

- 1069 ♀ ^{v. imp.} nip. 1½ A. jelskii ^{cruceri} 185-79-25-22-35 gms.
+ ut. horn 22x1½
Same type as ♀ 1068.

May 28, 1951 8 mi. ESE Crucero, 13700 13500 ft., Dpto. Puno, Peru.

- 1070 ♀ 1st. ov. 2 mm. Bubo virginianus naevatus 1000 gms.
Stomach contained remains, light brown bird, furculum 25 mm. wide.
On ground in nearly level dry short grass pampas.

May 29, 1951 8 mi. SSW Limbani, 15250', Dpto. Puno, Peru.

- 1071 Liolaemus Back bright orange, black intermixt
1072 1 mm. "

Caught under rocks.

May 31, 1951 5 mi. NNE Puno, 15600', Dpto. Puno, Peru

- 1073 ♀? o.n.c. ^{Parquet} Psilopsiagen aurifrons orbignesi ^{us} 45 gms.
1074 ♂ testis 2 mm. P. a. o. no wt.

Part of flock 50± on roadside in rolling dry rocky-grassy area.

Crops stuffed 2 mm. diam. white seeds; quinoa?

June 1, 1951

1075 8 mi. SSW Limbani, 15500', Dpto. Puno, Peru

- 1075 ♀ imm. E. sublimus? 106-37-19-16 - 11 gms.

Caught 8 p.m. in dark on road near rocks, grass, water.

June 4, 1951 4 mi. N. Limbani, 8800 ft., Dpto. Puno, Peru.

- 1076 ♀ ^{v. imp.} nip. 2 mm.; lact. tissue Oryzomys minutus aurillus ^{more like long tailed orange brown} 202-122-23-15-16 g.
ut. horn 15x2, no emb. - used?

- 1077 ♀ ^{v. imp.} nip. 2 mm. Oryzomys longicaudatus 205-111-23-16-22 g.
+ ut. horn 20x1, no emb. - used?

Same kind 1076.

- 1078 ♂ test. 6x4 Oryzomys minutus aurillus ^{tail short} 200-114-24-17-20 g.

Same kind 1076.

Specimen Catalogue

June 4, 1951 4 miles N. Limbani, 8000 ft., Dpto. Puno, Peru.

1079 ♀ ^{v. imp. Rhodm-like, naked ears, segm. tail} ut. horn 15x2½ Microtus? 200-94-24-19-27g.
nip. 2 mm.

1080 ♀ ^{v. imp.} ^{nip. 2 mm, flat} horn 16x1½ Same " 196-91-24-18-25g.

1081 ♂ test. 7x5 Same " 208-101-25-18 -29g.
(prep. M.K.)

1082 ♂ test. 4x3 " 183-93-23-16-21g.

1083 also, disc. ♀, 10gms. ut. horn 11x1, same kind,
orange brown, unicolor dly. tail.

1083 ♂ test. 5x3 Oryzomys 233-141-26-18 -23g.

1084 ♂ test. 5x3 Oryzomys? 338-201-36-23-78gms.

1076-1084 caught snap traps, near or under rocks, damp

banks within 200' river, where vegetation herb + bush sized.

1085 ♂ test. 1½ Ochthoeca thoracica 13gms.
Flycatcher, black, chestnut breast.

Shot from branch 3' over clear rushing river; jungle vegetation.

June 5, 1951 8 miles SSW Limbani, 15000 ft., Dpto. Puno, Peru.

1086 ♀ ^{vag. partly perf.; nip. 1 mm.} horn 20x1½ Phyllotis pictus 206-93-26-22-50g.
no emb. - tract saved

Fast low stone wall next to low bushes on exposed ridge.

June 6, 1951

1087 ♂ test. 12x7 P. pictus? 229-96-27-22-72g.

Base low rock wall near small bushes on knoll in shrt. grass pasture.
small black toad

1088

1089 ♂ test. 12x8 P. darwini? 271-144-30-31-70gms

Base rock wall near shrubs on short-grassy knoll.

June 7, 1951

1090 ♀ ^{vag. imp.} ut. horn slender P. pictus? 169-71-24-21-34gms.
1 mm?

1091 ♀ ^{vag. imp.} ut. horn slender P. pictus? 105-80-25-22-41gms.
1 mm?

Base rock wall on gentle damp short grass slope (100 yds. SSE House)

Specimen Catalogue

June 6, 1951 8 miles SSW Limbani, 15000 ft., Dpto. Pungu Peru.

1092 ♂ test. $1\frac{1}{2}$ Zonotrichia capensis 28 gms.

Snaps traps by stone wall on short grassy knoll.
Gray back, white belly, & throat, & bill.

1093 ♂ test. 2mm. Speotyto Dorca speculifera 45 gms.

Several on rocks & ground. Skull adult; back & tail molting.
Brown burrowing owl.

1094 ♀ ova $\frac{1}{2}$ mm Speotyto cunicularia 212 gms.

June 8, 1951

1095 ♂ imm. Neotomys ebriosus 171-68-23-19-34 gms.

Thick grass on peninsula of pond.

June 9, 1951

1096 ♀ vag. imp.; nip. 2mm.
no emb. - lact. 7.
tract saved Neotomys ebriosus 210-88-23-20-53 gms.

Base rough cliff where thick tall grass joined.

June 10, 1951

1097 ♀ no emb.
tract saved Chinchilla 236-90-35-37-120 gms.

Base of rough cliff near tall grass & brush. Red chipping chitons.

1098 Liolaemus

Shallow burrow under rock in pasture.

June 11, 1951

1099 ♀ vag. perf.
nip. $2\frac{1}{2}$; lact. 15.
tract saved. Neotomys ebriosus 201-77-23-20-62 gms.

Thick grass below cliff near rocks on steep slope, rather damp.

1100 ♀ ^{molting} ^{thin} tract saved Chinchilla 223-85-34-35-86 gms.
Red chipping in ear. Part part. back molting.

1101 ♂ test. $3\frac{1}{2} \times 2\frac{1}{2}$ " 242-101-34-36-115 gms.

1102 ♂ test. 3×2 " 230-88-35-36-94 gms.

1103 ♂ test. 6×5 " 260-102-35-39-139 gms.

Caught at base rock outcroppings on steep S. slope, 1100-1103 within 60' where
grass tall near base small cliff, & there 3 same cliff as 1097. Two taken
on meat (mouse) bait.

C. Koford
1951

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Specimen Catalogue

15000ft.,

June 12

8 miles SSW Limbani, Dpto. Puno, Peru

- 1104 ♀ ^{no emb.} ut. horn 30x1 Chinchillula 271-103-35-37-169 gms.
broad lig. vascular stomach & contents = 21 gms.
nipples flat, 3 mm. Back 10' cliff near thick grass on steep S. slope.
vag. partly perf.

June 11

- 1105 ♀ largest ovum 1/2 mm. ^{pale orange crown} Mussisaxicola flavinucha 34 gms.

Open short grass green meadow, perching on rocks.

June 14

- 1106 ♂ ^{saved,} test. 9x7 Peromyscus temminckii 198-67-28-26-70 gms.

Mouth hole under ^{many} rocks on steep slope near tall brown grass; some cliff on ^{Ficus, mites,} Neotoma & 5 Chinchillula taken. Pungent stomach contents. Red chiggers.

June 13

- 1107 ♂ imm. test. 2 1/2 mm. long Chinchillula 231-96-35-35-91 gms.
In grass tunnel 3' diam. under bush near edge foot cliff.

June 14

- 1108 ♂ test. 8x5 Phyllotis darwini? 240-117-29-31-55 gms.
^{Trapped by MK}
Man's trap line, on steep rocky SE slope.

June 15

- 1109 ♂ test. Imm. ^{Hummingbird - brown breast, green back, orange on forehead} Oreotrochilus estens 7 gms.
Near rocks ^{on} in short grass slopes.

June 16

- 1110 ♀ imm. Phyllotis ^{d.?} ~~estens~~ 211-116-28-27-30 gms.
^{Damp.}
6' from where Peromyscus taken, grass tunnel at base 15' cliff, steep slope.

June 17

- 1111 ♂ test. 1 mm. ~~Geothlypis trichas~~ Cinclodes fuscus 32 gms.

Green rampa near pond. mod. fat. molting body & tail.
^{gray, pale brown crown.}

- 1112 ♀ ov. 1/2 mm. Mussisaxicola flavinucha 38 gms.
mod. fat.
Rock coral in short grass pasture. Several present.

C. Koford
1951

18

Specimen Catalogue

June 18 8 miles SSW Limbani, 15000 ft., Dpto. Puno, Peru.
flycatcher - gray; no crown patch

1113 ♂ test. $1\frac{1}{2}$ Muscisaxicola cinerea 22 gms.

Green short grass meadows where rock outcroppings.
Dark blue gray finish

1114 ♀ o.n.e. $\frac{1}{2}$ mm. Phrygilus unicolor inca 24 gms.

One of pair on rock in short grass damp gentle slope, near rock slide.

June 19

1115 ♂ test. 4x2 Chinchillula rump molting; new sat. hair
266-107-36-38-134 gms.
stom. + contents 26 gms.
Skeleton only 1116 ♂ test. 7x6 Chinchillula 269-103-35-37-168 gms.

1115 + 1116 taken at foot cliffs, mod. slope, where rocks + grass.

1117 ♂ test. 6x4 Neotomys ebriosus 189-72-23-20-46 gms.
~~207-88-26-23-59 gms.~~

Alongside small boulder, thick bunch grass adjacent.

1118 ♀ nip. 2 mm.
vag. imp. (form. p.)
lact. tissue.
ut. h. 25x2
Tract saved Phyllotis pictus 207-88-26-23-59 gms.
chipping on ears
Thick grass alongside rocks, steep slope, damp area.

June 22

1119 ♀ nip. 2 1/2
vag. per-f. (barely)
mam. tiss. mod.
emb. 2R, 13x10
Tract saved
Fleas, mites Penomys lemniscatus 211-77-28-27-78 gms.
Passage under 7" wide rock pile, 4' from lanceis (cuttings in passage).

1120 ♀ nip. 2 mm.
ut. scars, 3L, 2R.
vag. imp. Phyllotis d.? 238-118-27-26-51 gms.

Edge rock slide, 100' below upper limit vegetation, under edge boulder. lanceis 3' dist.

June 21

Skull only 1121 ♀ ut. horn
65x2 Dusicyon 820-300-140-83-3200 gms.

Stone wall in short grass pasture, 50 yds. from camp. Loose bait.

June 23 1122 ♀ horn
95x4
Tract saved Dusicyon 1030-350-60-94 -5800 gms.
Same trap as 1121, & same bait. ~~1030-350-60-~~

June 22

1123 ♀ ov. not cnt. Spinus atratus 18 gms.

with another on rocks in short grass damp area.

June 24 1124 ♀ vag. per-f. tiny nipples
ut. horns slightly enlarged
Tract saved 1 flr. Penomys lemniscatus 191-67-28-25-63 gms.
Passage

1124 6" wide ~~passage~~ under rocks; cuttings lanceis on floor; barren broken rock area.

C. Koford
1951

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Specimen Catalogue

June 25 8 miles SSW Limbani, 15000', Dpto. Puno, Perú.

1125 ♂ test. 8x5 Neotomys ebrissus 215-92-25-20-50 gms.

1126 ♂ test. 8x5 " ebrius 202-82-24-19-54 gms.

July 11

1127 ♀ v. recent. Phyllotis darwini? skull destroyed
much mamm. tissue
259-136-28-29-60

Base rock wall of coral on dry hilltop. W. horn 20x2 1/2.

Skull only 1128 ♂ test. 32x23 Dusicyon 940-340-152-97-5 kgs.

50 yds. from camp; rock wall on dry grazed slope.

1129 ♂ test. 7x5 Chinchilla skull lost
trail shot. skull destroyed
225-67-35-35 -148g.

molting
Base rock wall on grazed dry hillside (A. jelskii yesterday same trap)

July 12

little lactal tissue
sk + sk. 1130 ♀ hip. 3 mm., flat. Penomys skull & sh. destroyed
vag. imp. (about 14500').
Tract saved

Under yellow-flowered Sonchis bush next to boulders low on rocky slope.

1131 ♀ test. 4x2 Phyllotis sublimis skull destroyed
154-58-23-23-31 gms.

Thick yellow-flowered Sonchis at base rock coral atop dry grazed hill.

Skull only 1132 ♂ imm. 17x13x10 Vicugna saved testis
external

Skull only 1133 ♂ test. 6.5x3.5x30 Hippocamelus skull destroyed
saved pieces testis

Skull only 1134 ♀ ut. horn 60 mm. " skull destroyed
saved ovaries

3 Heads donated by hunters who shot them nearby today.

July 14 9 miles W. CRUCERO, 13500', Dpto. Puno, Perú.

Skel. only 1135 ♂ test. 10x3 Theristicus caudatus brackii 1300 gms.

1136 ♀ largest ov. 2 mm. " " " 1200 gms.

July 15

8 miles SSW Limbani, Dpto. Puno, Perú.

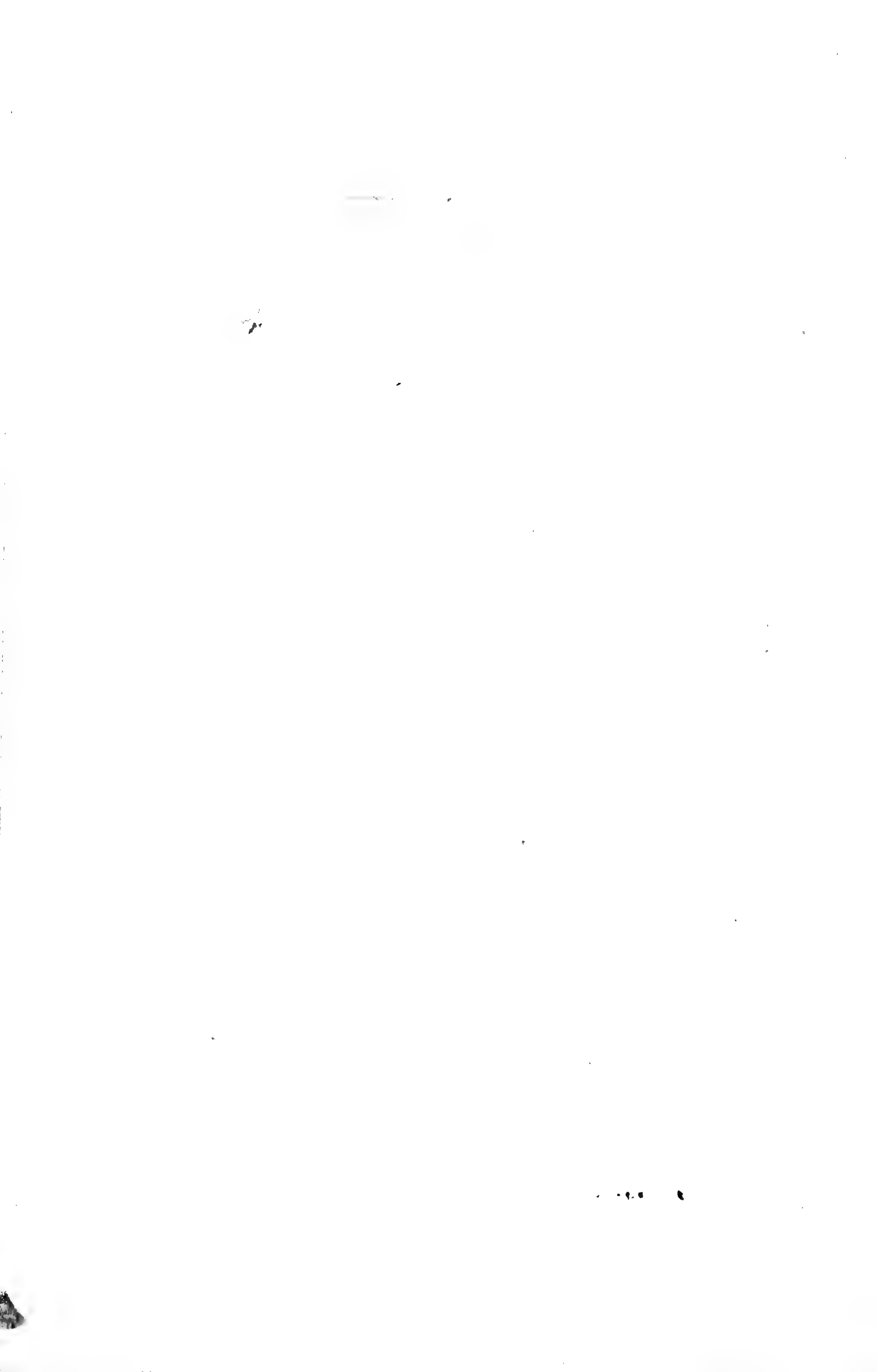
1137 ♀ 1 mm. Penomys lemmingus skull destroyed
139-45-24-19-27g.

1138 ♂ test. 4x3 Penomys " 144-50-24-20-28g.

Among boulders + yellow-flowered Sonchis near canyon bottom (14500±').

1139 ♂ test. 5x4 Akodon jelskii cruceri skull destroyed
190-84-26-22-4g.

Base rock wall on dry hill.



Specimen Catalogue

July 15 8 miles SSW Limbani, 15000', Dpto. Puno, Peru.

1140 ♀ no emb. or scars, ut. horns narrow. Phyllotis pictus ^{shell destroyed} 202-89-25-24-46g.

Mouth passage under boulders on slope nr. yellow-flowered Senecio.

July 16

1141 ♀ or not cul One of flock 50t, rocky & grassy rolling ground.
Sicalis pyropygialis ~~pyropygialis~~ 26gms.

July 17

skeleton 1142 ♂ test. 5x1½ Thinocorus dorb. 139gms.
Tapeworms in duodenum in loops around pancreas.
One of flock 20t. Flocks common now, up to 50 in flock.

-160-

skull only 1143 ♀ no emb. Dusicyon 1010-355-100-12lbs.
tract saved (rt. horn slit)
Shot near House. Lizard in stomach.

July 18 4 miles SSW Limbani, 13000', Dpto. Puno, Peru.

1144 ♀ V. imp. hip. 2mm. Phyllotis darwini? 240-130-28-29-41g.
ut. horn 1½ wide, 2 scars L. horn

Under granite boulder near sticking bush on E. slope, dry.

1145 ♂ ^{very imp.} test. 6x4 P. pictus ^{shell destroyed} 235-108-29-23-57g.

Under granite boulder foot slope, next to bush. Ventrums molting.

1146 ♀ V. imp. hip. 1mm. Oxymycterus ^{A. bolivianus subflavus} -17g.
ut. horns somewhat enlarged.

Among granite boulders, moss, grass, bushes, low on dry E. slope.

1147 ♂ test. 3x2 Oxymycterus ^{A. bolivianus subflavus} 205-87-27-16-32g.
^{shell damaged}

Among granite boulders, grass, bushes, 15' stream, steep E. slope.

1148 ♂ test. 4x3 Oxymycterus ^{A. bolivianus subflavus} ^{shell damaged} 155-67-19-14-17g.

On E. slope among small granite boulders, short grass, moss, bushes.

1149 ♀ V. perf. hip. 2mm, turgid P. pictus 214-95-26-24-51g.
tr. saved

Among granite boulders and thick aromatic small-leaved bush on E. slope.
^{shell destroyed}

1150 ♂ test. 8x6 P. pictus 215-97-27-23-53g.
test. saved

Thick grass 5' from tiny stream on E. slope among granite boulders.

July 19

skelet. 1151 ♂ test. 4x1 Thinocorus ^{test. saved} dorbignianus 142gms.

Specimen Catalogue

1951

July 20 8 miles SSW Limbani, 15000', Dpto. Puno, Peru.

Skelet. 1152 ♂ test. 8x3 *Chlorophaga melanoptera* 5 lbs.
one of flock 13 on green mat.1153 ♂ test. 4x2 *P. sublimis*Shell destroyed
148-52-21-22 -25g.1154 ♂ test. 3x2 *P. sublimis*Shell destroyed
135-47-21-21 -22g.

53+54, base rock wall on dry grazed knoll; a few bushes.

July 22

1155 ♂ test. 6x3
test. saved*Upucerthia validirostris pallida* 37 gms.

Wren like, on green mat near water.

1156 ♂ test. 2mm. *Cinclodes* 30 gms.
Rust tail line - outer red. cinnamon tips - pale supercil. line - near white throat.
brownish belly, not white

Skeleton destroyed

On green mat near water and rocks.

July 24 Sandia, 7500 ft., Dpto. Puno, Peru

Shell destroyed
1157 ♂ test. 3x2*Oryzomys largeiauratus*Shell destroyed
226-136-25-17 -22gms.

Base knoll at edge flood plain flat among bushes.

July 25

1158 ♂ test. 5x3 *Tadarida*Shell destroyed
98-34-8-21 -13gms.Shot ⁱⁿ evening near river; 100+ seen over bushes starting 5:30 p.m.

July 24 5 miles SSW Sandia, 8800', Dpto. Puno, Peru

1159 ♂ test. 3x2 *Turdus chiguanco* 117 gms.
primaries molting, outer 2 or 3 emerged.

7 miles SSW Sandia, 9500', Dpto. Puno, Peru.

1160 ♂ test. 5x4 *Turdus fuscater* 142 gms.

molting; distal 3 primaries new.

1159-1159+60 shot among rocks & brush along road Sandia to Cuyo.

Both with purple berries(?) in digestive tract & feces. Common bird.

7 miles W. Cuyo Cuyo, 14300', Dpto. Puno, Peru.

Skelet. 1161

♂ test. 28x12 *Fulica gigantea*
test. saved

5 1/2 lbs.

On water, used "nest" near shore large lake.

July 28 [Aricoma], 8 mi. SSW Limbani, 15000'

1162 ♀ *Phegornis mitchellii* 37 gms.
ov. sl. enl., 1 mm. Photomicro

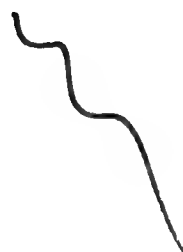
1152 + 1163 ♂ test. 2 1/2 x 1 1/2

31 gms.

1162 + 1163 together.

1163 on
next page

Edge small rocky pond in open rolling & rocky area.



Specimen Catalogue

1951

8 miles SSW Limbani, 15000', Dpto. Puno, PeruJuly 29

- 1163 ♂ test. $1\frac{1}{2}$ long ^{Mod. fat} Upucerthia validirostris ^{pallido} 37 gms.
Short dry grass + rocks.

July 306 miles SSW Limbani, 14000', Dpto. Puno, Peru

- 1164 ♂ test. 1 mm. Troglodytes musculus 14 gms.
Snap traps in thick grass tunnel next to cliff base by stream.

1 mile S. Limbani, 11500', Dpto. Puno, Peru

- 1165 ♂ test. $\frac{1}{2}$ mm. ^{Blue hummer} Chalcostigma stanleyi 6 gms.

at least 3 seen, ^{green} brush + mossy rock walls in canyon bottom.

- 1166 ♀ ov. not cul. ^{capadocian - like finch} Phrygilus unicolor 23 gms.

Canyon bottom near open brush, rocks.

- 1167 ♀ ov. not cul. ^{imm. juv.?} Grallaria audicola punensis 52 gms.
^{Babbler? - long tail, long tars, streaked crown + ventrum.}
Top mossy rock wall in brushy canyon bottom.

5 miles SSW Limbani, 13800', Dpto. Puno, Peru

- 1168 ♂ test. 6x3 Akodon boliviensis ^{subfuscus} 145-68-19-15-18 gms. ^{shell destroyed}

Caught during daylight under large granite boulder adjacent to tall dry grass.

July 314 miles SSW Limbani, 13000', Dpto. Puno, Peru

- 1169 ♂ testis 35x22 Lagidium 650-295-95-70-1500g. ^{shell destroyed}

Lowest one seen in descent to Limbani.

August 17 miles SSW Limbani, 14200', Dpto. Puno, Peru

- 1170 ♂ test. 5mm. long. Colaptes rupicola puna 171 gms. ^{Calling.}

Short dry grass + rocky rolling area, near small stream.

5 miles SSW Limbani, 13800', Dpto. Puno, Peru

- 1171 ♀ 2 scars R. horn ^{nip. 2 mm.} Neotomys 207-82-24-19-56 gms. ^{shell destroyed}
^{post-lact.}

Thick dry bunch grass next to granite boulder + brush.

August 38 miles SSW Limbani, 15000', Dpto. Puno, Peru

- 1172 ♀ ov. not cul. ($\frac{1}{2}$ mm.) ^{white forehead - white outer margin lateral rectrices} Muscisaxicola albifrons 60 gms.

Green puna mat + rock outcroppings.

Specimen Catalogue

August 3 8 miles SSW Limbani, 15000', Dpto. Puno, Peru.

1173 ♂ testis 1 1/2 long. ^{flycatcher - brown crown - gray rest - outer more outer rather light.} Musc. juninensis 23 gms. mod. fat.Shot dry grass & rocks.
skull ossified1174 ♂ test. 1 mm Musc. cinerea mod. fat 19 gms.1175 ♀ o.n.c. Circulodes fuscus albiventris some fat 28 gms.

August 4 Crucero, 13500', Dpto. Puno, Peru

1176 ♂ test. 6x3 Lessonia rufa oreas 16 gms.

1177 ♂ test. 4x3 " " " 16 gms.

1176 & 1177

Edge of slow running river Carabaya in pampas area.
6x4 Stom. & gullet 1000 ~~1000~~ maggots.skeleton 1178 ♂ test. 4x4 Phalacrocorax 650 gms.skeleton 1181 ♂ test. 14x6 Anas flavirostris 450 gms

Lake Aricama, 15000 ft., Dpto. Puno, Peru

skeleton 1179 ♂ test. 4 1/2 x 3 Spectyto 169 gms. Destroyedskeleton 1180 ♂ test. 15x5 Chloephaga 6 1/2 lbs. Destroyed
largest (R)
mod. fat.Stomach contents green O-shaped fruit (of Distichia?).

Aug. 4 Crucero, 13500', Dpto. Puno, Peru.

(1182) ♂ testis 20x8 Anas flavirostris oxyptera 420 gms.
Querquedula

1181 & 1182 shot on slow moving Carabaya river in pampas area.

August 6 Rosario, 40 mi. N. Azangaro, 13200 ft., Dpto. Puno, Peru

skeleton 1183 ♀ ov. 4 mm. Gallinula 155 gms. (red just below feathers)
light green legs. ~~Dark~~ red frontal shield. Tip culmen green.

Pond beside road. Common.

August 9 8 mi. SSW Limbani, 15000', Dpto. Puno, Peru.
o.n.c. Leptasthenura andicola peruviana 12 1/2 gms.
saved

1184 Boulder on greenish flat.

August 10 1 mile S. Limbani, 11500', Dpto. Puno, Peru

1185 ♂ t. 7x4 Phyllosis pictus 142-82-25-21-43g

Foot rock wall under bushes on damp slope. Daylight.

1186 ♀ 6 elong. nip. 2 mm. A Kodon jelskii cureri 183-82-24-20-42g.
Insect saved.

Ft. bush next to masonry rock wall. In afternoon.

Much lact. tissue. Naked area connecting & around posterior. (.) (.)

Specimen Catalogue

August 10 1 mile S. Limbani, 11500', Dpto. Puno, Perú

1187 ♀ ^{nip. 2 mm.} vag. perf. Neotomys 210-⁸⁷~~46~~-24-20-58gms.
2 emb. R. horn, C-R 12 mm.

Grassy slope near bushes + rocks, somewhat dampish.

1188 ♂ test. 7x5 Akodon boliviensis ~~subfuscus~~ 156-67-20-17-19gms.

Mossy rocks near bushes on damp slope.

August 11

1189 ♀ ^{nip. 1 mm.} vag. imp. Akodon boliviensis ~~subfuscus~~ 157-67-19-16-20gms.
^{ut. horns long}
^{tr. say ed}

Foot rock wall on grassy slope. (Discarded 2 ♀♀, 15gms., nip.

1mm. + ~~tooq. imp.~~, 151-67, +151-70, 1 vag. perf.; ut. horns slender, clay

1190 ♂ test. 2x3 Phyllotis ~~sp. phaeus~~ 240-132-29-25-36gms.

Base rock wall now in thick grass on dry slope.

1191 ♂ test. 3x1½ Phyllotis ~~sp. phaeus~~ ^{tail short} 147-38-28-23-32gms.

Same as 1190. Red chequers in + lateral prefrontal pinnules.

1192 ♂ test. 5x3½ Phyllotis pictus 213-98-26-22-43g.

Foot rock wall on grassy slope.

1193 ♂ test. ¾mm. Chalcostigma statleyi 6gms.
^{blue black hummer. Like ♂ 1165.}

1194 ♂ test. 6x3 Spizitoria parvus 7gms.

Bush tit like, in bushes. This one alone. Up to 3 seen together.

1195 ♀ ov. 1mm. Spizitoria parvus 7gms.

1196 ♀ ov. ½mm. Diglossa brunneiventris 13gms.
^{bill hooked + eat. campers.}
^{black upper etc., gray nape + sides,}
^{red-brown breast, abd.}

Bushes on damp slope.

1197 ♀ ov. not ent. Oreotrochilus estellei 8gms.
^{Hummer - green back - pale brown below -}
^{outer rect. white, median not.}

This or ~~over~~ other same bird pursued an 1193; bushes nr. stream.

1198 ♂ R. to. 3mm. streaked breast, long tarsi, sh. tail, Like 1167.
L. to. ½mm. Grallaria audicola punensis 51gms.

On grassy ground, damp slope, nr. stone walls + bushes.

August 14 8 mi. SSW Limbani

1199 ♂ test. 1mm. Aythya ~~sp.~~ (humilis?) 21gms.

~~1200~~ Anas

Specimen Catalog.

1951

August 15 8 miles SSW Limbani, 15000', Dpto. Puno, Peru

1201 ♀ ^{vag. imp.} nip. 2 mm. Phyllotis darwini 242-123-26-27-47g.
no emb.
tract. saved.

1202 ♀ ^{vag. imp.} nip. 1 mm. P. d. 235-127-
no emb. ~~127-27~~ 26-28-38g.
tract saved

1201+1202 (+ 2♀♀ + 2♂♂) near boulders on dry E. slope; some

bunch grass, Senecio, + viscochar present.

1203 ♂ testis 7x5 Akodon jelskii ^{preuri} 187-84-25-20 -34g.

1204 ^{Finch} Phrygilus plebejus -16gms.

1

Frog

1205

Frog

1206

1205+1206 Many large tadpoles same pools. Mud bottom. Plants in water.
Clean deep pools, slowly flowing, on flat grassy area near lake.

August 16

1207 ♂ test. 4x2 Phyllotis darwini 233-120-28-28-39gms.

1208 ♀ ^{vag. imp.} nip. 2 mm. Akodon jelskii ^{preuri} 193-83-24-21-36gms.
2 emb., C-R 16 mm.

1209 ♀ ^{tr. saved} ov. not cnt. ^{see 1199} Cnemidophorus? Asthores (humilis?) 22gms.

Dry hillside among dry bunch grass + boulders, on ground.

1210 ♂ test. 4x1 1/2 ^{dors. long. rays inga} Thrinocorus ^{body molt} 162gms
very fat
test. saved
crissum molting
rump molting

1211 ♀ ^{ov. slightly cnt.} 1956. ov. 1 mm. Thrinocorus " " 109gms
mod. fat

1210+1211 shot near water on green Distichia mat.

August 18

1212 ♂ test. 6x5 Neotomys 203-88-24-19 -45gms.

Damp passage next to boulder among thick bunch grass + Senecio.

1213 ♀ ut. horn 23x1 Phyllotis sublimis 158-57-24-22-30gms.

1214 ♂ test. 7x5 " " 175-63-24-21-35gms.

Boulder + brush, isolated, on short grass grazed slope; months holes.

Specimen Catalog

1951

August 18 8 miles SSW Limbani, 15000', Dpto. Puno, Peru

skel. ^{tract saved}
 skeleton 1215 ♀ 1st. ov. 4mm. ^{small gr. bill, vermilion eye, dark gray upper parts, black top head & hind neck, white underparts, gray feet. C. occip.} *Columbus occipitalis* 295g.

With another on Fox Lake; perhaps same pair or seen moulting a few days ago.

1216 ♀ ^{saved} ov. not cnt. *Diuca specularis* 45gms.

^{study in crop.}
 with another on ground, short grass, some rocks.

1217 ♀ ^{saved} ov. not cnt. ^{like 1199} *Cusculpes? Asthenes (humilis?)* 21gms.

August 19

skel. ^{1st. ovum}
 skeleton 1218 ♀ 2 1/2 mm. ^{rough} *Attagis gayi* 285gms.

skel. ^{1st. testis 4mm. sand}
 skeleton 1219 ♂ ¹²¹⁸⁺¹²¹⁹ *Attagis gayi* 235gms.

Pair together at 15600', summit of road, on ground near pond.

August 21 Hda. Calacata, 13000 ft., Dpto. Puno, Peru

1220 ♂ test. 3 1/2 x 1 1/2 ^{flycatcher - gray throat - some brown from upper - white supercilium} *Ochthoeca oenanthoides* 15gms.

1221 ♂ test. 1 1/2 *Zonotrichia capensis* 27gms.

August 22

long tail, 1 1/2 mm. str. bill, brown.
 1222 ♂ test. 3mm. *Asthenes (wyatti?)* 21gms.

1223 ♂ test. 2mm. *Upucerthia validirostris pallida* 41gms.

1225 ♂ test. 2mm. *Turdus chiguanco* 101gms.

August 23

skel. ^{tinamou - large}
 skeleton 1224 ♀ 1st. ov. 3mm. *Nothoprocta ornata* —
 pink-gray hd, yellow-orange breast

1226 ♂ test. 2 x 1 1/2 *Phrygilus gayi* 37gms.

attached headlight of standing car several times. In yard of house.

August 24

skel. ^{tinamou - large}
 skeleton 1227 ♂ test. 12 x 5 *Nothoprocta* —

skel. ^{tinamou - large}
 skeleton 1228 ♀ 1st. ov. 3mm. *Nothoprocta caprimulgus* —

1229 ♀ ^{1st.} ov. 2mm. *longirostris stri punctatus* 71gms.

dry slope (N. - facing).
 On nest. with 2 young, 11 + 17gms., on bare ground among rocks high on

1230 ♂ nestling (in nest of 1229). *caprimulgus longirostris* 17gms.

August 25

1231 ♀ 1st. ov. 2mm. ^{tinamou - small} *Nothura m.* 133gms

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Specimen Catalogue

August 25 Hcda. Calacala, 7 mi. SW Putina, 13000', Dpto. Puno, Peru

skelton 1232 ♀ 19st. ovum
1 1/2 mm. ^{Tinamou - small} Nathura maculosa agassizii 217 gms.

1231-1232, on gentle slopes in 1 1/2' high dry grass < 100 yds. from stream.

1233 ♂ test. 5 mm. ^{Tinamou - large} Nathiprasta ornata ♂. 430 gms.

1234 Tard

1235 "

1236 "

1234-1236 in clear pond 2' deep. One amplexing largest.

August 29 8 miles SSW Limbani, 15000', Dpto. Puno, Peru

1237 ♂ ^{t. 8x6} P. sublimis 170-59-22-23 -30g.

Large isolated boulder 10' from stream; between base & Senecio bush.

1238 ♀ post-lact.
♀ hio. 1 1/2 A. jelskii 176-75-24-21-32 gms.

1239 ♂ test. 6x5 Cinclodes atacamensis a. 53 gms. Distichia mat by pond.

Wounded, flew high in air & joined by another which perched near it.

August 30

1240 ♂ test. 1 1/2 mm. ^{white forehead & supercil. tan crown.} Muscisaxicola flavivirga 36 gms.
^{saved}

Ground, on green mat near rocks & water.

1241 ♀ ov. not cul. ^{Tail gray, darker over marks.} Buteo (poecilochrous?) slight fat
^{Hawk - black & brown mottled.} 900 gms.

On rock cliff in high canyon near water.

August 31

1242 ♀ ^{skin & skel.} ^{vag. perf.} Peromyscus lemniscatus 205-65-26-34 -81 gms.
^{hip. 3 mm}

no emb. ^{test saved.} ^{left} Peromyscus lemniscatus // same traps as P. lemniscatus yesterday. Base small boulder on E-facing slope near humal grass & Senecio.

1243 ♂ test. 5 1/2 x 4 Neotomys 173-63-23-19 -41 gms.
^{red chippies in ear, vertical boretail, post. pro. penis.}
Hollow at base boulder on grassy slope 20' from water.

September 2

1244 ♂ test. 4x3 ^{smaller} Petrochelidon andicola 14 gms. - no fat.
^{saved}

In hole in road bank with 2 others.

100

100

100

100

Specimen Catalogue

September 2 Lake Aricoma Crucero, 14500', Dpto. Puno, Peru.

1245 ♂ testis 4x3 ^{Hamk, white below, blue-gray above, black test tip.} Puteo polysoma p. ^{mod. fat.} 750 gms.

On ground in short dry grass rolling country.

September 6 4 miles N. Limbani, 8800 ft., Dpto. Puno, Peru

1246 ♀ ^{nip. 1 mm.} no emb. Oryzomys longicaudatus 217-116-23-17-21 gms.

1247 ♂ testis 6x4 Oryzomys longicaudatus 241-138-24-16-29 gms.

1248 ♂ testis 5x4 ~~Akodon? Mischina~~ Oryzomys 186-90-23-17-21 gms.

1249 ♂ test. 7x5 ^{very muscular} Orolestes inca 251-132-25-16-39 gms.

1250 ♀ ^{to. saved} ^{& used nipples/} " " 220-115-23-15-29 gms.

1251 ♂ test. 8x5 ^{saved} " " skull broken 240-127-25-16-36 gms.

skelton 1252 ♂ test. 4x3 " " 231-232-129-25-15-28 gms.

1246-52.

Vegetated (trees, bamboo, shrubs, moss) slope on W. side of river, 10 to 200' from river, at night.

September 7 8 miles SSW Limbani, 15000', Dpto. Puno, Peru

1253 ♂ test. 2 mm. ^{saved} Zonotrichia capensis 27 gms.

September 8

1254 ♀ ^{r. imp.} ^{nip. 2 mm, flat.} Phyllotis darwini ^{two ears missing} 253-133-27-23-48 gms.

Discarded ^{no emb.} ^{to. saved} Dusicyon Discarded 13 lbs.

1256

Lizard

1257

September 9

Discarded ^{kull only} 1258 ♂ test. 35x20 Dusicyon Discarded 12 lbs. 965-345-160-95

Same trap as ♀ 1255.
wt. horn 14x1.

1259 ♀ imm. Punomys lemninus 181-61-27-24-48 gms.

September 10

1260 ♂ test. 12x9 ^{saved} P. darwini 253-126-28-29-63 gms.

Under overhang of boulder, sparsely vegetated slope; Ribera (?) near.

C. Koford
1951

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Specimen Catalogue

September 12 8 miles SSW Limbani, 15000', Dpto. Puno, Peru

1261 ♂ test. 8x5 Phyllotis pictus 212-97-27-23 / 49 gms.
(saved) ground.

Early afternoon, bare ground sheltered by stones of wall, level short grassy.

1262 ♀ v. imp. nio. 1/2 P. pictus 222-97-26-23 / 55 gms.
(saved) wall or
Same place 1261 in, by 5 p.m. in trap set noon.

September 15

skeleton 1263 ♂ test. 11x5 Fulica gigantea slight fat 1400 gms.
(saved) shagreen
1264 ♂ test. 19x8 Spatula oxypora f. ferruginea no fat 325 gms.
(other smaller)

These in Pond 50 yds. diameter in short grassy area.

September 19 18 miles W. Cruceiro, 13000', Dpto. Puno, Peru

1265 ♂ test. 1mm. Sycalis lutea slight fat 22 gms.

1266 ♀ ov. not ent. Sycalis lutea slight fat 22 gms.

at mouths holes in 15' high vertical dirt road bank.

5 miles W. Cruceiro, 13500', Dpto. Puno, Peru

skeleton 1267 ♀ test. ov. 6mm. Chloephaga melanoptera 2200 gms.

Discarded skeleton 1268 ♂ test. 10x6 " " Discarded 3400 gms.

Together, pair, on flat pampa near water.

Lake Aricoima, 15000', 15 mi. ENE Cruceiro, 15000', Dpto. Puno, Peru

skeleton 1269 ♂ test. 6x3 Hawk like 1245

5+ legions in stomach. Open short grass hillside perched on rock.

September 21 8 miles SSW Limbani, 15000', Dpto. Puno, Peru

1270 ♀ v. widely perf. - long ut. horns; no obvious scars. 233-95-25-23 - 61g.
little lact. tiss. P. pictus

(saved) Base cliff behind damp clump tall grass.

September 22

1271 ♂ test. 1 1/2 Phrygilus unicolor 25 gms.

September 24

1272 ♂ test. 36x25x22 Vicugna 1730-235-400-123 105 lbs.

Squeaky bone one by Lake shot by hunter. Seen since Sept. 12

1951

Specimen Catalog

September 24 8 miles SSW Limbani, 15000', Dpto. Puno, Peru
 Juven. - skull $\frac{1}{3}$ ossified swallow

1273 ♂ test. $\frac{1}{2}$ mm. Riparia riparia 12 gms.; mod. fat.
 starling? - gray, long bill iris yellow-brown

1274 ♂ test. 2 mm. Idiospar brachyurus 47 gms.

Roche at shore swift clear stream

1275 ♂ test. 3 mm. Cinclodes fuscus ^{albiventris} 30 gms. - no fat

Snare trap at marsh hole under rock on grazed hillside.
 Brown, short tail, rufous chin.

1276 ♀? o.n.c. Asthenes (humilis?) 20 gms. - slight f.

September 30 Lake Aricoma, 14 mi. NE Cuzco, 15000', Dpto. Puno, Peru

1277 ♂ test. 11 x 4 Cinclodes ^{Geositta oenicularia} 27 gms. - no fat
 sand (♀, 30 gms., 1 gnt. ov., 2 mm., discarded)

1278 ♂ test. 6 x 4 Asthenes modesto 18 gms. - slight fat

Common in tall grass & near road.

1279 ♀ 1 gnt. ovum 2 mm. Philoscops resplendens 200 gms. - no fat

Common plower. One paragon on damp flats.

October 5 5 miles S. Asillo, 13000', Dpto. Puno, Peru

1280 ♀ ^{vag. imp.} Phyllotis osilae ? ~~238-125-27~~ 34 gms.
^{no emb.} (another ♀, 214-114, 29 gms., discarded) 238-125-27-25-1

Dry rocky slope near bushes. ut. horns long & slender.

1281 ♀ ^{vag. imp.} Akodon boliviensis ? 135-57-18-13 13 gms.
^{no emb.}

Thick dry bunch grass on steep dry & rocky slope.

1282 ♂ test. 1 mm. Patagona gigas ^{peruviana} 23 gms. - no fat.

Perched on dry stalk on dry steep rocky slope where many bushes.

1283 ♀ ov. not cnt. Oreotrochilus estellei ^{hummer} 7 1/2 gms.

1284 ♂ test. 2 mm. Zonotrichia capensis 24 gms.

1285 ♂ test. 3 mm. Falco femoralis pichinchae 275 gms.

Blue gray dorsum, brown ventrum; mustache, light barring on tail & w. wings.

October 11 6 miles SSE Imata, 14500', Dpto. Puno, Peru

1286 ♂ test. 9 x 7 Phyllotis darwini ? 219-109-26-25

1287 ♂ test. 7 x 5 ? 244-129-28-26

1288 o. 1 gnt. ov. 1/2 Agriornis montano insulens

Specimens

October 12 6 miles SSW Santa Lucia, 13500', Dpto. Puno, Peru

1289 ♂ test. 6x5 Petrochelidon andicola

Swallow, pale gray beneath, dark gray-brown above, metallic brack

October 13

5 miles S. Asillo, 13000', Dpto. Puno, Peru

leton

1290 ♀

1st. ov. 4 mm.

~~Nothoprocta~~ Nothura maculosa 250 gms.

one of two alongside road, flat dry grass area, in about 8 a.m.

October 17 4 miles SSW Limbani, 13000', Dpto. Puno, Peru

1291 ♂ t. 1 1/2 + head. Phryganea gayi 37 gms.

Boulders, tall grass, steep slope - on rock & ground.

Oconoque, 10± mi. N. Limbani, 7000±', Dpto. Puno, Peru

October 19 ♀ 1292 emb Myotis

80-36-10-15

1293 ♀ no emb. "

82-36-10-15

1294 ^{Accipiter?} ~~Cremic~~ in rock overhanging trail; with 1 ♂ (described).

1294 ♂ test. 5 mm. Buteo magnirostris occidentalis

Paraya-like tree in canyon bottom. 2 flat flies in feathers.

October 20

1295 ♂ testis 8x4

^{Brown mouse}

~~Thomomys~~ acris

187-83-23-18

1296 ♂ test. 8x4

" "

190-83-23-17

Wooded damp slope behind Inca Co. station.

1297 ♂ test. 7x6

Swallow - blue back, white below

Pygochelidon cyanoleuca

Common at Aqualani & Oconoque. Nests in house eaves.

1298 ♂ ? t.n.c.

^{Recurve}

Myiarchus (atricap?)

1299 ♂ imm. test. 6 mm.

^{Possum}

Didelphis paraguayensis peruviana

425-225-39-30

1300 ♂ test. 8 mm. Momotus momota

^{Mot-mot}

1301 ♀ 1st. ovum

^{Owl}

Ciccaba albitarsus

1302 ♀ a.n.c.

Henicorhina leucophrys

14 gms.

Dark mossy woods, many ferns.

1303 ♂ test. 8x4

^{chat - spall?}

Ochthoeca cinnamomeiventris

13 gms.

Common at Oconoque & Aqualani.

Thick brush, damp slope, at side trail.



Specimens

October 21 [Aqualani] 4 miles N. Limbani, 9000', Dpto. Puno, Peru

1304 ♂ test. 4x3 ^{Brown man} Troglodytes solstitialis 13 gms.

October 22 4 miles SSW Limbani, 13000 ft., Dpto. Puno, Peru

1305 ♀ ^{3 corp. lvt.} brood patch ^{Brown man} Troglodytes musculus puno 14 gms.

1306 ♀ ^{1st. ov. tract} 2 mm. ^{severed} Colaptes rupicola puno 186 gms.

October 23 1 mile S. Limbani, 11500', Dpto. Puno, Peru

1307 ♂ test. 7x4 A. jelaskii 192-83-26-22 - 45 gms.

1308 ♂ test. 5x4 Oryzomys? longicaudatus 217-123-26-17 - 27 gms.

Chest & nape mottled. 8 recorded or, 19 gms., testis 6x3.
note, brown, on. Caught in thick vegetation, dense, ferns, mod. slope.

1309 ♀ ^{nip. 1 1/2} vag. imp. Oxymycterus 196-79-24-18 - 37 gms.
^{no emb. or ut. scars, ut. horns slightly thickened}

Dense damp foliage on slope near creek (also 1310)

1310 ♂ test. 7x4 Oxymycterus 199-81-24-18 - 44 gms.

1311 ♂ test. 6x4 Phyllotis phaeus 261-135-30-25-54 gms.

1312 ♀ ^{vag. imp.} ^{no emb. or ut. scars} P. phaeus 233-26-124-28-23-38 gms.
^{1311 & 1312.}

Thick grass near shrubs & rocks at side stream.

October 24 4 miles SSW Limbani, 13000', Dpto. Puno, Peru
Frog-river bank

1313

1314 ♀ ^{vag. imp.} ^{vag. nip. 3mm.} Phyllotis phaeus 251-128-28-23-47 gms.
^{ut. sc. - 24 BK, small black spots.}

Foot large boulder adjacent to thick grass on steep damp slope.

October 25 [Aqualani] 3 miles N. Limbani, 9500 ft., Dpto. Puno, Peru

1315 ♂ test. 9x7 ^{Caenolestid} Oreolestes inca 228-118-25-15 - 41 gms.

1316 ♂ test. 1/2 Metallura (tyrannina?) 4 gms.
^{Green hummer, blue wings & tail}
^{Black hd. & back, blue on wings & rump, scarlet breast &}

1317 ♂ test. 9x6 Poecilothraupis igniventris 41 gms.
^{belly & sides red.}

10' high bush on mod. dry steep slope by road.

1318 ♂ test. 9x4 Knipolegus atterimus 21 gms.
^{Black flycatcher, some white on wings.}

October 26

1319 ♂ test. 6x8 Oreolestes inca 38 gms.
^{Caenolestid} 241-134-26-15 ^{body}

1320 ♂ test. 3 mm. " 23 gms.
226-125-25-15

Skull only

1951

Specimens

October 26 [Aqualani] 3 miles N. Limbani, 9500 ft. Dpto. Puno, Peru

1321 ♂ test. 6x4 Oryzomys minutus aculeatus 199-119-24-16 / 15gms.

Damp woods near stream.

1322 ♀ vag. imp. ut. horn 14x2 Thomasomys daphne 223-131-25-19 / 25gms.
 nip. < 1/2 mm. ~~Oryzomys~~

1323 ♂ t. 8mm. - slight fat Atlapetes rufinucha 29gms.
 yellow breast, black upper r. r., rufous crown.

Near ground in dense damp green woods, with 1324.
 Like 1317. Small robin

1324 ♀ 1st. ov. 3mm. Catharus fuscater mentalis 35gms.

1325 Snaptrap on ground in wet thick vegetation.

1325 ♂ brood patch Like 1317.
 + 10mm. egg + 3 corp. 1st. 45gms.

Bushes, tall, in mod. - dry damp places. at least 3 others seen.

October 27 4 miles N. Limbani, 8800 ft. Dpto. Puno, Peru

1326 ♂ test. 8x5 Microtus 202-97-24-18-29gms.

3 miles N. Limbani, 9500 ft.

1327 ♀ 1st. ov. 1mm. yellow flycatcher, olive back, black crown.
 2 corp. 1st. Basilictes nigro-cristatus 17gms.
 brood patch

Streamside green woods, damp area.

1328 ♂ test. 1mm. Spinus magellanicus 13gms.

1329 ♀ 1st. ovum 1mm. Knipolegus atterrimus 19gms.
 Day Phoebe, rufous rump.

October 28

Flycatcher - small Empidonax-like.

1330 ♀ ov. n. e. Mecocercus leucophrys 12gms.

October 29

1331 ♀ vag. imp. molting
 + nip. 2mm. Oryzomys 240-148-27-23-31gms.
 ut. horn 18x2 Tip tail curls - light belly (♀, 216-126, from)
 Beside lush at foot grassy damp slope. (nearly discarded.)
 1332 ♀ v. perf. mod. lact. tissue Thomasomys 231-136-25-19-25gms.
 nip. 1 1/2 ut. horn 13x2 - no emb.
 Dark belly, tip tail not curled curled.
 Damp dark green wet woods.

2 1/2 miles N. Limbani, 10000 ft. Dpto. Puno, Peru

1333 ♂ test. 4x3 Oryzomys longicaudatus 227-130-26-17-24gms.

Near white belly, tail light below. rocks, cactus
 mod. open, brush & grass, flat mod. slope, mod. dry.

(2 others, ♀♀, 9510500, discarded.)

1951

Specimens

October 26 [Aqualani,] 3 miles N. Limbani, 9500', Dpto. Puno Peru
 1334 snake - call. M. Koford. grassy area.
 Road on flat shot

October 31 [Port Arthur], 13 miles W. ^{2 mi. N.} Crucero, 13000', Dpto. Puno Peru

1335 ♂ test. 6x4 Akodon jelskii ^{puccini} 178-75-24-20 - 40gms.

Rat wall near ranch house. Pale mouse. Descended 30gm. or much darker.

1336 ♀ ^{vag. perf.} nip. 1½ A. boliviensis 157-58-18-14 - 22gms.
 no emb.

Near hole, flat ground, 1 ft. tall dry grass, 20' from river.

1337 ♂ test. 9x6 Phyllotis pictus 213-93-25-24 - 52gms.

Thick fine grass near roads on dry slope.

November 1 5 miles S. Asillo, 13000 ft. Dpto. Puno Peru
 mouse - lumpy above, scaly below.

1338 ♀ ^{vag. imp.} nip. 1 mm. Hesperomys? (like 1045) 145-66-18-14 - 15gms.
 2 scars L. UH. mod. fat.

Foot cliff next to bushes, high on dry slope.

1339 ♀ ^{v. perf.} nip. 2 mm. A. boliviensis 155-64-18-15 - 22gms.
 4 emb. 14 mm. C-R, 2 RUH, 2 L, UH.

1340 ♂ test. 7x4 P. osilae? 251-136-27-25 - 47gms.
 Pale spot chest.

1341 ♂ test. 11x7 P. darwini 248-130-27-29 - 46gms.

1342 ♂ test. 6x4 A. jelskii pulcherrimus 183-80-24-20 - 38gms.

1343 ♂ test. 3mm. Falco sparverius peruvianus slight fat 100gms.

1344 ♂ test. 5mm. Falco ^{skel.} ^{apennino-like 1285} 290gms.

November 2 2 miles NNW Pucará (est.), 12700', Dpto. Puno Peru

1345 ♂ test. 6x5 Hesperomys dualla 123-44-18-18 - 19gms.

1346 ♂ test. 5x4 " 105-34-16-16 - 12gms.

Flat ground ^{among} 1½' high grass clumps, near 1" diam. burrow.

1347 ♂ test. 8x5 Akodon boliviensis 164-70-20-15 - 28gms.

1348 ♀ ^{vag. imp.} nip. 1½ mm. " " 150-60-20-14 - 22gms.
 Uter. walls somewhat thickened.

1251

1252

1253

1254

1255

Specimens

1951

Nov. 4

Santa Rosa (nr. Mazocruz) 13500', Dpto. Puno, Peru1349 ♂ test. 6 mm. (other small) Oreopholus ruficollis

Coll. by D. D. Fric. Killed by flying into telegraph wire.

November 5

1 mile N. Puno, 13000', Dpto. Puno, Peru.1350 ♂ test. 6 x 4 P. darwini 275-148-29-29-52 gms.

Roads, grass adjacent, dry slope.

1351 ♀ v. imp. (barely) P. osilae 221-108-26-24/44 gms.
2 emb. 1 RUH 1 LUH, 13 x 8 mm.
hip. 1 1/2 ut. horns sl. thickened1352 ♂ v. part perf. A. jelskii pulcherrimus 184-81-24-20-33 gms.
+ hip. 1 mm., pigmented

1351 + 1352 same line & kind of place as 1350.

November 6

3 mi. W. Vilque, 13000', Dpto. Puno, Peru.Skeleton 1353 ♂ saved small sandy Nothura m. a. 235 gms.1354 ♂ test. 11 mm. Nothura maculosa agassizii 205 gms.

1353-54 shot 5 yds. apart, 50% cover (bunchgrass 1 1/2' tall), flat, m. road.

November 7

13 miles E. Tincopalca, 13500', Dpto. Puno, Peru1355 ♀ v. barely imp. A. jelskii pulcherrimus 180-81-24-20-33 gms.
hip. 1/2, imp. ut. horns 2 mm. wide

Under tall bushes at foot road bank boulders.

1356 ♂ test. 11 x 7 P. darwini 240-116-27-24-54 gms.

Foot road bank boulders, next to tall bush, viscacha near.

1357 ♂ test. 10 x 6 P. pictus 210-87-25-22-59 gms.

Next to tall bush at foot road bank boulder slide.

November 11

Huaylarco, 52 mi. ENE Arequipa, 15000', Dpto. Arequipa, Peru1358 ♂ test. 11 x 7 P. darwini 223-113-27-27-48 gms.
(exact saved)1359 ♀ 3 emb. 3 mm. P. darwini 208-110-26-27-34 gms.
LUH.1360 ♀ v. imp.; mod. lact. tissue A. jelskii pulcherrimus 184-79-25-20-33 gms.
m. 1 1/2 LUH thickened same1361 ♀ o.n.e. Phrygilus plebejus 14 gms.
gray finch - spotted breast, plum pale
Fe. muscivora - brown crown1362 ♂ test. 10 mm. Muscisaxicola juninensis 23 gms.November 12 1363 ♂ skull only test. 25 x 17 Desicodon 1100-400-160-100-18 lbs.1364 ♂ test. 6 mm. Thimocorus dorbignyanus ingae 106 gms.

C. Koford
1951

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Specimens

- November 13 ^{14500'} Paty, 45 mi. NE Arequipa, Dpto. Arequipa, Peru
1364 ♂ test. 35x20 Dusicyon ^{remained} 1110-400-175-105-19 lbs.
Shot beside road in rocky area at noon.
6 miles SSE Imata, 14500', Dpto. Arequipa, Peru
1365 ♂ 1st. ov. 8mm. Chloephaga 5 lbs.
With mate near stream. ♂ remained until shot at.
- November 14 Huaylarco, 52 mi. ENE Arequipa, 15000', Dpto. Arequipa, Peru
1366 ♂ test. 23x10 Phoenicopterus 6 1/4 lbs.
With 3 others in 6" deep weedy water 50 yds. from edge large lake.
- November 15
1367 ♂ test. 11x8 P. darwini 233-104-2.9-28, 67 gms.
- November 16
1368 ♂ test. 5x3 Charadrius arcticus ^{Small plover - white breast, brown crown, black forehead & thru eye, brown back, pale band across breast.} 45 gms.
- November 22
1369 ♀ 1st. ov. 2mm. Butor (poecilocheilus?) ^{Hawk - black breast, brown belly, brown back, tail band, gray wings.} 1200 gms. mod. fat.
- November 24
1370 ♀ 1st. ovum 1mm. Muscisaxicola junco ^{Commonest flycatcher here.} 19 gms.
- November 25
1371 ♂ test. 5x3 Colaptes rupicola ^{lemon yellow iris} 150 gms.
- November 28
1372 ♂ test. 7mm. Geositta cunicularia 25 gms.
- November 30
1373 ♀ 1st. ov. < 1/2 mm. Erolia bairdii ^{Sandpiper, mottled back, white belly, brown breast, pale line thru eye, black legs.} 35 gms.
- December 6
1374 ♂ test. 2mm Phrygilus erythronotus 36 gms. mod. fat.
- December 11
1375 ♂ test. 25x15 Dusicyon 1130-4082-105-22 lbs.

Specimens

1951

December 13 ~~December~~ 6 miles SSE Imata, 14500' Dpto. Arequipa, PERU1376 ♂ ^{saved} test. 11x8 Cinclodes fuscus albiventris 30 gms.

Toad

1377 Rocky sandy dry slope near tala, yarata.

December 141378 ♂ ^{saved} test. 8 mm. Thinocorus dorbo. ingae 113 gms.1379 ♀ ^{saved} 1st. ov. 2 mm. Cinclodes fuscus 31 gms.December 17 ^{Salinas,} 22 miles E. Arequipa, 14200' Dpto. Arequipa, PERU1380 ♂ test. 7x4 Phyllotis darwini 242-123-29-30, 49 gms.Foot cliff, S. exposure, near Opuntia clump.December 181381 ♂ ^{saved} test. 10x4 P. darwini 282-143-30-30, 79 gms.Mouth hole under boulder, sandy dry slope, near Opuntia & bunch grass.1382 ♂ ^{saved} test. 9x7 A. andinus 131-48-18-15, 23 gms.

Under boulder, sandy slope, near bunch grass.

1383 ♀ 1st. ov. 1/2 mm. Lessonia rufa 14 gms.

Near lake shore on ground. 2 ♂♂ near.

December 231384 ♀ ^{V. imp.} h. 1 1/2 A. andinus 135-52-19-15-18 gms.

sandy shelf, bare boulder, yarata near.

December 22 ^[Km 30] 15 mi. E. Arequipa, 13700', 11500' Dpto. Arequipa, Peru1385 ♂ test. 1/2 mm. Asthene dorbignyi arequipae 21 gms.

In snap trap in rocky wash near brush.

1386 ^{1955.} 13 mi. E. Arequipa, 11500' ^[Km 30]

1386 ♀ ov. 1/2 mm. " " " 21 gms.

1387 ♀ one. Upucerthia validirostris

Rocky brushy dry slope. 41 gms.

December 26 Huaylaraskel. 1388 ♀ ^{1st. ov.} 12 mm. Phoeniceropterus 5 1/4 lbs.

1951
1952

Journal Specimens

skel. 1389 ^{skel.} ♂ test. 27 Phaenicopterus 5 1/2 lbs.
Huaylarco, 15000', 52 mi. ENE Arequipa, Dpto. Arequipa, Peru.
Iris pale tan, pupil tiny; legs gray-green, heels + feet ^{dull} rose.
December 27

1390 ♂ test. 14 mm. Recurvirostra andina 410 gms. - much fat.
Iris red, legs pale lead gray.
One of pair on Lake Peñero; shot by A. Pearson.

December 28
skull & baculum only 1391 ♂ t. 25 x 15 Dusicyon 1200 - 435 - 174 - 110, 19 lbs.

1952 Huaylarco, 15400', 55 mi. ENE Arequipa, Dpto. Arequipa, Peru

January 2 Tinamotis

1392 ♀ juv. Tinamotis pentlandii 360 gms.

Gentle slope among boulders + sparse tola + bare ground.
same trail

1393 ♀ ^{ov. m. s.} skull 1/3 clear Asthenes modesta 13 gms.

Snap trap on boulder + Sonensis slope; bare boulder.

1394 ♀ ^{196. ov. 2 mm.} brood patch ^{hummer} Oreotrochilus estella 8 gms.

With moss in hill near cliffs, Sonensis.

January 4 Huaylarco, 15400', 55 mi. ENE Arequipa,

1395 ♀ ^{196. ovum} 4 mm. Tinamotis sp. 1050 gms.

One of 3 on gentle slope among boulders, tola, yarita, bare ground.

10' exposed lutea? No brood patch. Oviduct 5 mm. wide.

January 6 [Km. 101,] ~~55 mi.~~ 33 mi. ENE Arequipa, 14000', Dpto. Arequipa

skel. 1396 ♀ ^{skel.} 1st. foll. 10 x 8 Nothoprocta ornata 650 gms.

25% grade ichu covered slope, no rocks. No brood p.

January 9 Huaylarco, 15400', 55 mi. ENE Arequipa,

skel. 1397 ♂ test. 13 x 10 Tinamotis 1000 gms.

Boulders on 5% up to 20% W. slope.

and 1/4 mi. W. 8 mi. W.

January 14 ~~4 mi. W.~~ Vilque, 13600', Dpto. Puno, Peru

skel. 1398 ♂ test. 6 x 3 1/2 Psilopsiagon 37 gms.

One of flock 15; rocks + ichu.

5.

1952

Specimens

January 11 Huaylarco, 15000', 52 mi. ENE Arequipa, Dpto. Arequipa, PERU
 skel. 1399 ♂ testis 21 mm. Chloephaga m. 6 1/2 lbs.

January 17

" 15400', 55 mi
 same
 1400 ♀ lgst. ovum 5 mm. Tinamotis pentlandii 950 gms.

January 19

skel. 1401 ♂ test. 12 mm. Tinamotis p. 1000 gms.

skel. 1402 ♀ lgst. ov. 3 mm. " " 925 gms.

Separate singles on 1/2 bare rock, tola, yaeta 5% slope.

January 26

skull 1403 ♀ lgst. ov. 3 mm. Tinamotis p. 900 gms.

skull 1404 ♂ test. 6 mm. " " 925 gms.

~~stopped Feb~~ 1403, 1404 with 5 juv. in group.

January 28 Huaylarco, 15000', 52 mi. ENE Arequipa, Dpto. Arequipa, Peru
 skull only 1404 ♂ juv. Vicugna

Freshly dead; evidently born early 1951.

February 10

1405 ♀ brood patch.
 ovum 11 mm. corp. lutea Recurvirostra erythronotus 44 gms.

8 mi. W. Vilque, 13500', Dpto. Puno
 skel. 1406 ♀ lgst. ov. 10 mm. + c.l. Nothura 238 gms.
 No brood patch

with another on flat of bottom canyon. (Coll. by O. Pearson)

February 23 33 mi. ENE Arequipa, 14000', Dpto. Arequipa

skel. 1407 ♂ 17x9 test. Nothoprocta sandal sh. 500 gms.

skel. 1408 ♀ egg in ovid. Nothoprocta " " 600 gms.

Km. 101, Festuca + ichu hill. Same hill as ♀ 1396.

Huaylarco, 15000', 52 mi. ENE

skull 1409 ♀ 15 mm. egg Tinamotis 1050 gms. 23 mm. at widest

skeleton 1410 ♀ egg in oviduct Tinamotis 925 gms. abd. apt. 20 mm.

skeleton 1411 ♂ test. 20x13 Tinamotis 1150 gms. x 60 long. skin and.

Gave O.P. to take to Berkeley

Fox 1363 skull

Vac. 1421 skull

Tan skull May 5

Tan sk 1409 g

Vac. 1132 of skull

Vac 1404 skull

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Check
labels
1416-1418

Specimens

March 10 Huaylarco, 15000', 52 mi. ENE Arequipa, Dpto. Arequipa, Peru

1412 ♀ 1st. ovum 3mm. ^{Dove-gold shoulder-} Motrio, aymara 63 gms. Slight fat.

March 11 With one other by road on ground. Green seeds in crop.

1413 ♀ 1st. ov. 4.2 mm. ^{sandpiper} Erolia bairdi 42 gms - mod. fat

One of flock 10± on Festuca flat near stream.

1414 ♂ test. 11x6 P. sublimus 165-56-23-20, 39 gms.

Under boulder on dry hillside, rather bare; Pycnophyllum + yareta.

1415 ♂ test. 8x5 A. jelskii pulcherrimus 76-75-23-20, 34 gms.

3 mi. SW Tinco palca, 50 mi. W. Puno

March 13 Cami. Tinco palca, 14000', Dpto. Puno Peru

1416 ♂ test. 3mm. Upucerthia validirostris 38 gms.

Rocks, tala, ichu, on mod. slope. Skull 2/3 clean

1417 Phrygitor

Huaylarco, 15000', 52 mi. ENE Arequipa

1418 ♂? downy young Chloephaga melanoptera 45 gms.

Found Mar. 11 in dry canyon with at least 4 others.

March 14

skel. 1417 ♂ test. 4mm. Thinocorus 105 gms.

March 22 3 mi. SW Tinco palca, 50 mi. W. Puno
Cami. Tinco palca, 14000', Dpto. Puno, Peru

1418 ♂ juv. Tinamotis pentlandi 78 gms.

One of 7 with ad. ♂. Captured March 20.

March 23 Huaylarco, 15000'

1419 ♂ test. 7 Metriopelia aymara 60 gms. -

April 1 Huaylarco 15300', 55 mi. ENE Arequipa,

1420 0 1 emb. each ^{hip. 2 mm.} Phyllotis boliviensis 215-85-29-28, 71 gms.

^{horn, 12x18}
Stone coral where Senecio lushes, 50 yds. from water + green grass.

1421 juv. Vicugna pickap. This yrs. juv.

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Specimens

March 31 Tincopalca, 13800', 50 mi. W. Puno, Dpto. Puno, Peru

14220[♂] juv., test. 4 mm. Nothoprocta ornata 355 gms.

Crop $\frac{3}{4}$ green seeds O; + 15 \pm beetles (Curculionidae, Tenebrionidae, Carabidae)

April 18 Huaylarco, 55 mi. ENE Ar., 15300', D. Areq., Peru

1423 <sup>brood patch
yng. in nest.
3 exp. lct.
1956 ov. 1 mm.</sup> ♀ Phrygilus plebejus 17 gms.

2 ten gm. juvs. in nest; 4 mm. feathers dorsal tract. Also 1 egg, 20x14

pale greenish blue with brown splatters, espec. around larger pale

hairs to other end. Nest 5 $\frac{1}{2}$ mm, 9 $\frac{1}{2}$ mm. outer diam., thick grass lined with

vicuña hair & feathers (incl. Tinamotis), ^{isolated} in grass clump against bare large

boulder. Boulders, tala, yanta, pycnophyllum dry slope.

1424 ♀ ov. < $\frac{1}{2}$ mm. Muscisaxicola juninensis 24 gms. Molting.

April Huaylarco 15000', 52 mi.

1425 ♀ prob. juv. ^{R. subl.?} Hesperomys derilla 108-28-20-16, 16 gms. (tail tip broken)

April 14

1426 ^{vag. imp. ut. anal, 2 RH 3 LH 6 mm. - (saved)}
♀ ^{hip. 1 $\frac{1}{2}$} P. sublimis 181-55-22-25, 56 gms.
much lact. tiss.

Sand slope among Festuca clumps, 50 yds. from lake shore.

April 15

1427 ^{v. per-f.} ♀ ^{hip. 2 mm.} Hesperomys derilla 138-41-18-17, 29 gms.
lact. tiss.

<sup>3 R 4 L Hom ut.,
C-R 12 mm.</sup> Sand hill among Festuca clumps.

1428 April 16 ♂ L. 7x5 Hesperomys derilla 107-32-17-15, 13 gms.

April 19 Huaylarco, 55 mi. ENE Ar., 15300'

alcoholic 1429 ^{alcoholic} ♂ Tinamotis pentlandii 29 gms., fresh & wet.

Taken from egg at about 20 days incubation.

April 20

1430 ♂ test. 6x4 Hesperomys derilla 111-36-17-17, 13 gms.
- 99-32-16-15, 10 gms.

Sand among spring Festuca clumps. Described 8 mm, 1

1431 ♀ 19st. ov. 1 mm. Phegornis nitchelli 30 gms.

Slight fat. Clear stream thru Eutichia mat.

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✓ Label 1942

Specimens

April 21 Huaylarco, 15300', 55 mi. ENE Arequipa, Dpto. Arequipa, Peru

1432 ♂ 6.2 mm. juv. Phegornis mitchelli 36 gms. - no fat

1433 ♀ one Capella paraguariae 86 gms. -

April 22 1431-33 near wide green mat slope where clear stream; bordered by rocks.
shell clean gray-branched body, streaked breast

1434 juv. ♀ Phrygilus plebejus 21 gms. - slight fat

1435 ♂ skull 9/10 ossif. test. 3 Agriornis montana 68 gms.

Boulders bordering green grass on gentle slopes below.
shell ossif. Brain flycatcher

1436 ♂ test. 2 Muscisaxicola maculirostris 23 gms.

April 23 v. imp.

1437 ♀ nip. 3 mm. much lact. tiss. Akodon andinus 136-47-19-14, 23 gms.

Rocky mountain, yareta, at edge gravelly flat; rather barren.

1438 ♂ t. 6x4 Hesperomys deuillei 112-32-16-17, 16 gms.

April 25

1439 ♂ t. 7x6 Hesperomys deuillei 106-31-16-16, 14 gms.

Sand slope among clumps spring Festuca.

May 5

1440 chick Tin. pentlandii

Hatched on May 1 + left nest May 3.

May 10 Pachachaca River, 7000' SE Abancay, Dpto. Apurimac, Peru

1441 ♂ test. 7x5 Crotophaga ani 140 gms.

Pepper tree, cactus, thorn tree, aspen. near river.

1442 ♀ 1st. ov. 1/2 Merganetta armata slight fat

8000'
12 mi. S. of
11500' SW of Chalhuanca

1443 ♂ test. 17x5 Merganetta armata slight fat

with mother, ♀. Brush + grass hills surrounding.

May 12 25 mi. SW Chalhuanca, 14500', Dpto. Apurimac, Peru

1444 ♀ nip. 2, v. imp. Phyllotis pictus 225-95-26-23 - 94 gms.

(nip. 3 - OP out up)
Discarded (♀ 84 gms.), 43 gms., + 3 smaller.

Round worms in liver + in ball at bladder area. Sand, Bacteria.

35
2
210

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Specimens

May 14 21 mi. ENE Puquio, 14500' Dpto. Ayacucho, Peru

1445 ♀ vag. imp.

Phyllotis sublimis
esperomys

94-26-16-15, 9 gms.

Among coarse grass clumps, dry site. Smaller one found dead.

1446 ♂

P. darwini

tail short
220-92-28-27, 64 gms.

Boulder slope near tall green bunch grass.

May 13 35 mi. ENE Puquio, 14500'

1447 ♀ juv.

Phlegornis mitchelli

30 gms.

With another on green wet mat.

May 14 9 mi. NE of Puquio, 13500'

1447

Upacathia

34 gms.

1448

Discarded
Spine tail

20 gms.

1449

Snake

In cleft rocks on dry ichu slope.

1450 ♂ t. 14

P. pictus

230-96-26-24, 80 gms.

By boulder near rivulet; tall ichu adjacent. Damp, dark.

May 15

1447 ♂ t. 12

A. boliviensis

147-66-19-9, 21 gms.

1448 ♀

Emb.

P. sublimis

162-52-23-23, 51 gms.

1451 ♀

ut. swell

P. pictus

231-102-27-26, 66 gms.

1452 ♀

ov. 1/2 mm.

5 mi. NW Puquio, 11500'

Colibri coruscans

8 gms.

May 17

Tarma, 20 mi. NW Chala, Dpto. Arequipa, Peru

skel. 1453

pelimp.

Atta Diomedea black & tail, white rump
& under pts., pearl gray face.

May 20

3 mi. W. Atico, 100' Dpto. Arequipa, Peru (sea level)

1454 ♂ t. 544

Marmosa elegans

181-101-13-21, 13 gms.

Smaller gray ♂ discarded. Both by boulders on mod. slope, dry ground.

1455 ♀

v. imp.

Phyllotis darwini

217-115-24-25, 30 gms.

1456 ♂ t. 6

"

226-112-25-27, 47 gms.

1952

Specimens
JournalMay 25 Chucarapi, 300', Tambo Valley, Dpto. Arequipa, Peru1457 ♀ no emb. Marmosa elegans 174-96-¹²/₁₀-23 13 gms.

Dry garden near prickly pear cactus.

 1458 ♂ ^{Testis 2 mm.} Pyrocephalus ^{vermillini flycatcher} v. 16 gms.
 skel. 1466 ♂ test. 3 Ani. Crotophaga mod. fat 86 gms.
May 261459 ♀ ^{slim} ut. Phyllotis darwini — — 23-27, 27 gms.

Rocks in rocky sandy canyon.

1460 ♀ ♂ t. 3 mm. Phyllotis darwini 212-115-23-26, 26 gm.1461 ♀ no emb. Mus 175-85-17-17, 15 gms.1462 ♂ t. 1 mm. Pyrocephalus ^{scarlet tanager} v. 16 gms.At 1463 ♂ on + Chordeiles a. ^{night hawk} mod fat 35 gms.May 271464 ♂ ^{Bat - no tail - leaf nose} Glossophaga? 69-9-11-15, 12 gms.

Empty water tunnel, in day, at Heda. El Canto

1465 ♀ Myotis — 74-34-6-14, 4 gms.1466 In vacant room at Santa Maria at 9 p.m.
— see May 25May 30 2 mi. E. Chivata, 10000 ft, Dpto. Arequipa, PERU
^{Red brown belly mouse}1467 ♂ t. 6X6 Onychomys? 173-83-19-15, 21 gms.1468 ♀ v. perf. lact. Phyllotis sp. (long-toothed) 264-129-27-27, 67 gms.

1469 ♀ v. perf. i scars 3R 3L. " 268-134-28-27, 66 gms.

Along rock walls in small brush-like plant area.

May 10 Juliaca, 12500', Dpto. Puno Peru1470 Snake From rocky hill at edge town.June 3 Heda. Umayo, 15 mi. S. Juliaca, Dpto. Puno, Peru1471 ♂ t. 2 Agelaius thilius 42 gms.1472 ♀ 1st. ov. 4 mm. Colymbus chilensis mod. fat1473 ♀ 1st. ov. 6 Centropelma + collapsed follicles very fat 50 gms

1952

Specimens

June 4 Umayo, 15 mi. S. Juliaca, Dpto. Puno, Peru

- 1474 ♀ ^{v. imp.} ^{nip. 1/2, unpg} A. jelskii pulcherrimus 175-78-25-20, 27gms.
- 1475 ♀ ^{v. imp.} A. boliviensis 147-62-19-14, 16gms.
- 1476 ♂ t. t, abd. P. ba darwinii 226-112-27-26, 43gms.
- 1477 ♂ t. A. jelskii pulcherrimus 177-78-25-20, 32gms.
- 1478 ♀ ^{2 nip. 9mm.} ^{v. imp.} Cavia (Sula) musteloides ^{wt. from 4mm. wide} 245-8-41-27, 340gms.

June 5

- 1479 ♂ ^{t. 3} skull 1/3 clear Capella ^{paraguayae} slight fat. 77gms.
- 1480 ♀ 1st. on 1 Ortygonax rtyrhynchus 155gms
- Legs dull red. Bill green, red ventral base & blue dorsal base. Iris red
- 1481 ♂ t. est. 2 Phrygilus Phrygilus alaudinus 31gms.
- Spencer. yellow bill & legs - white spots medial in lateral rectum
- Brushy slope at foot cliff in dry area.
- 1482 ♀ ^{one} skull clear Phrygilus gayi 35gms.
- Brush in cliff recess. Large bellied finch; yellow below.

June 6

- 1483 ♂ test. 2 A. jelskii pulcherrimus 178-80-25-20, 31gms.
- 1484 ♀ ^{v. imp. 44 slim} ^{nip. 1} A. boliviensis 147-60-20-15, 18gms.
- 1485 ♂ test. 4 " " 148-58-20-15, 16gms.
- 1486 ♂ test. 3 Petrochelidon andicola no fat 16gms.
- 1487 ♀ ^{v. imp.} ^{nip. 2} A. jelskii pulcherrimus 178-74-24-20, 37gms.
- 1488 ♂ t. 6 A. jelskii " 194-87-25-20, 39gms.

June 7

- 1489 ♂ t. 2 Lentasthenura andicola 13gms.
- 1490 ♂ t. 1 skull clear Sicalis lutea 21gms.
- 1491 ♀ ^{one} ^{1/2 mm.} Agelaius thilius 31gms.
- 1492 ♂ t. 6 Metriopelia melanoptera Gymnophaps ecclesiae 88gms.

Common around buildings & trees near buildings

- 1493 ♀ one. Anas puna ^{versicolor} Prob. juv. - rosate in scapulum. 490gms.
- one of black & white 20± on lake.

C. Koford

1952

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dy type
1498

Specimens

June 8 Heda. Umayo, 15 mi. S. Juliaca, Dpto. Puno, PERU

1494 ♂ t. 33x12 Anas spini caua 700 gms. 33 gms.
Bill bright yellow with medial dorsal stripe of black.1495 see below Upocentrus juv decadent 43 gms.

June 9

1496 ♀ v. imp. nip. 2 Akodon boliviensis 172-65-19-16, 33 gms.

Dry "fine mud" field near houses.

1497 1498 ♂ test. 4 Mus 146-70-17-15, 13 gms.

June 10

1498 ~~1498~~ ♀ coll. foll. Anas versicolor puna slight fat 450 gms.

Bill shy blue with dorsal medial black stripe.

June 16 3 mi. NE Arapa, 12600', Dpto. Puno, Peru

1499 ♂ t. 2 Like 1045 Heperomys 146-69-19-19, 13 gms

1500 ♀ Like 1045 " 128-61-17-18, 11 gms.

One on bare dusty ground at mouth rock crevice on rather dry hillside. One by grass clumps near rocks near stream.

1501 ♂ t. 5x3 A. boliviensis 171-72-21-15, 29 gms.

By rocks & grass at wet streamside.

1502 ♂ t. 4x2 P. osilae 232-121-27-24, 39 gms.1503 ♀ ut. h. slim P. osilae 201-98-24-22, 28 gms.1504 p one. Phrygilus gaxi mod fat 34 gms.

June 17

1505 ♀ one Catamenia manetis ^{seeded - gray, cream, rufous crissum} 18 gms

Bunch grass, rocks, brush, on slope near stream.

June 18

1506 ♀ UH slender like 1045 Heperomys 146-71-19-19, 14 gms1507 ♂ test. 3 Sitta " 136-60-19-19, 13 gms.

One by rock wall near grass near stream. Other near rocks near stream.

1508 ♀ slim U.H. P. pictus 210-93-25-22, 46 gms



1952

Specimens

June 18 3 mi. NE Arapa, 12600', Dpto. Puno, Peru

1509 ♀ ^{no emb.} WH 1mm. wide P. pictus

191-78-25-23, 43gms.

Pictus near rocks near stream & bunch grass.skel. - 1510 ♀ 1st ov. 3mm. Calymbos Centropomus 650gms.1516 ♀ 1st ov. 3mm. ^{same} enl. oviduct Zenaidura auriculata 125gms.

13000'

June 20 Heda. Calacala, 7mi. SW Putina, Dpto. Puno, Peru

1511 ♀ 1st ov. 2mm. Phalacrocorax megalopterus 1000gms.

One of a pair in eucalyptus tree.

1512 ♂ t. 8x5 P. pictus 206-93-25-23, 79

Thick grass near tiny stream.

1513 ♂ t. 7x4 P. osia ? 253-129-26-23, 55gms.

Edge low 3' bank amid tall grass area. 32gm. ♂

1514 ♂ t. 5x3 A. boliviensis 157-67-20-15, 24gms.

Thick grass near stream.

1515 ♀ vag. perf. Cavia 202-4-39-26, 173gms.

1516 See above.

1517 ♂ t. 3mm. Caprimulgus longirostris much fat 48gms.

Dry rocky hillside, 50 yds. from where nest last August.

June 21

1518 ♂ t. 3x2 Hesperomys ? 140-64-18-19, 13gms.1519 ♂ t. 2½ x 1½ Hesperomys 140-64-18-18, 13gms.1520 ♂ t. 3x2 Hesperomys 138-64-18-18, 13gms.1521 ♂ t. 2 Capella paraguayae 82gms.1522 ♀ 2mm. LH 10x12. Cavia R. trochiloides 250-5-41-26, 340gms.

Thick grass near rock wall. Grass passage with many droppings.

June 27 1523 ♀ vag. imp. Hesperomys 138-65-19-18, 11gms.Rock wall a slope near clumps grass, P. osia, A. bolivi.

Skull only 1526 ♂ Alpaca - old, freshly killed

1952

Specimens

June 27 Heda. Calacala, 13000', 7 mi. S. Putina, Dpto. Puno, Peru

1524 ♂ t. 4 Phyllotis osilae 227-120-25-22, 35 gms.

Disi. 2 non-pregn. ♀♀; 33 gms. ♂ (test. 3 long).

June 28 15 mi. E. Juliaca, 12500', Dpto. Puno, Peru

1525 ♂ test. 2 Upucerthia dumetaria slight fat. 48 gms.

Low bushes, sandy ground, near shore lake.

1526 — see p. 47 of catalog.

July 3 Oconoque, ^{7000'} 6 mi. N. Limbani, Dpto. Puno, Peru

1527 ♂ 6 mm. Caprimulgus longirostris 40 gms.

On trail at night. At least 2 others seen.

1528 ♂ 3 mm. Centurus ^{Picus rivoli} mod fat 98 gms.

Green leafed tree next to river.

1529 ♂ test 1 1/2. Ab. 1/3 clear Serpophaga cinerea
 Both (test) gray flycatcher. Black wings + crown.
 Rooster in + near rushing clear river.

1530 ♂ t. 1 Myiarchus tuberculifer 2 gms.
 Preen - yellow belly, gray throat.

Shrubbery. Trees + bushes near river.

1531

July 4

1532 ♂ t. 11K6 Lenoxys apicalis mod fat
~~Nectomys~~ 307-156-34-26

Damp vegetation under trees on E. side slope.

1533 ♂ t. 4 Oryzomys longicaudatus? 218-123-24-12

Damp dark draw near stream, ferns.

1531 ♂ t. 1 Coeligena torquata ^{green hummer - rufous neck - white out. tail feath.}
^{8 gms.}
 white, rufous hd., yellow ventrum, olive dorsum

1534 ♂ test. 1 Dendroica petechia? 13 gms.

July 5

~~Thy~~ Thlypopsis ^{ruficeps} ~~interpres~~

pale gray belly.

1535 ♂ t. 4 Oryzomys ^{huaysi?} 266-142-33-21, 56 gms.

dark belly Alcedo ^{aerodora?}

1536 ♀ lact. Oryzomys 180-77-23-18, 33 gms.

Bushes, damp hillside behind (E) of mule station. 5 disc.

1952

Specimens

July 5 Oconeque, 6 mi. N. Limbani, Dpto. Puno, Peru

1537 ♂ t.3 ^{yellow breast, black hd, grackle} *Phenicticus aureo-ventris* 55gms. - slight fat

1538, 1539; 1540 Several singles seen in bushes near houses, river.

1540 ♂ t.3 ^{Spine tail} *Synallaxis azarae*

July 6 [Bella Pampa], 16 mi. N. 2 mi. E. Limbani, Dpto. Puno

1541 ♀ ^{Tungui} *Rupicola peruviana saturata*1542 ♂ ^{Bat} *Peropteryx* sp. 64-16-8-16

1543 ♀ " " 69-14-8-16

In tunnel, day, near water entry for power plant.

July 7 Santo Domingo, — mi. N. Limbani, Dpto. Puno

1544 ♀ *Tadorna*1545 ♂ *Tadorna*

In corrugated iron roof. Hundreds here.

[Bella Pampa], 16 mi. N. 2 mi. E. Limbani

1546 ♀ *Carollia* Bat1547 ♂ *Carollia* *Lonchoglossa*?

In power plant tunnel. 100' in branch of tunnel. In tunnel.

1548 *Caperidgus Uropsalis lyra*July 8 1549 ♀ *Carollia*1550 ♀ *Carollia*1551 ♀ *Carollia*1552 ♂ *Embalonurid*
Peropteryx sp.?

1553 ♂ "

1554 ♂ "

1552-4.

Hanging in power plant tunnel in day.

1555 ♂ *Desmodus rotundus*1556 *Desmodus* "

In tunnel, near flowing water deeper in tunnel.



1952

Specimens

July 8 [Bella Pampa], 16 mi. N. 2 mi. E. Limbani, Dpto. Puno, Peru

1557

~~Swallow~~
Chaetura rutila fat
Roosting
In tunnel in rock at night. A nest also high on wall.

1558

Myotis

Shot near B.P. house at night near light

1559 ♂

Neacomys spinosus~~Neacomys spinosus~~

Two mice. taken same trap & discarded.

Runway by mossy rock where no brush or trees.

July 9

1560 ♀

Red bird

Rhamphocelus carbo

Skel. 1561 ♀, lg. ov. 2

Merganetta

1562 ♂

Desmodus Diphylla ecaudata

1563 ♀

Carollia

1564 ♂

"

1565 ♂

"

1566 ♂

Red bird

Rhamphocelus carbo

Skel 1567 ♂

Red bird

Rhamphocelus carboJuly 10

Skel 1568 ♀

Dasyprocta

Shot 6 a.m. in field of yuca.
Tungui

Skel. 1569 ♀

Uropsalis lyra

1570 ♀

Carpodacus

In tree by river.

1571 ♂

Uropsalis segmentataCarpodacus

Caught by hand; roosting, loud.

1572 ♀

Breeding - blue head
Tanagra cyanicollis

1573 ♀

Phaeo. common on rocks along river.
Sayornis nigricansJuly 11

skin + skull 1574 ♂

Coniculus

580-15-105-43, 12 lbs.

skin + skull 1575 ♀ 20 C-R

Coniculus

660-21-110-45, 18 lbs.

10 lb. ♀ given to Mrs. Heller, Argentina

Shot at night by eyes in yuca stated where much obvious damage.

1952

Specimens

July 12 [Bella Pampa], 16 mi. 2 mi. E. Limbani, Dpto. Puno, PERU

1576

~~Manacoraco~~
Ortalis guttata

1 emb., 5 mm. embryo

July 13 1577 ♀ Phyllostomus Vampyrus 85-0-17-22

1578 ♀ 1 emb., 10 mm. "

Hanging in shallow shaded cave.

1579 ♀ collapsed follicle -
1576 ♀ + large follicle Kingfisher Chloroceryle amazona

On rock in Quitor river.

July 14

1580 ♀

Vampyrus
Phyllostomus

1581 ♀

"

skel. 1582 ♀ 1 emb., 10 mm.

"

81-0-17-23

1580-82

1583 ♀ one. In tunnel in rock near water intake for power plant
near river Inambari

July 15Dryocopus lineatusmauve, like 559. Neacomys spinosus

skel. 1584 ♀

Neacomys spinosus

205-108-23-15

Same place as 1559.



1952

Specimens

July 16

12 mi. N. Limbani, Dpto. Puno, Peru

1538 ♂ test. 8x11 ^{Oryzomys} ~~Oryzomys~~ ^{white belly.} ~~heaysi?~~ 375-174-32-24

Foot small cliff; wet, green, shady; by Monkey Bridge.

1539 ♂ test. 6 ^{Puffbird} ~~Malacoptila~~ ^{fulvogularis} 50 gms. - slight fat

Tree in shade on damp slope. Frozen.

1585 ♀ 1st. ov. 1/2 ^{Saltator} ~~Myiodynastes~~ ^{chrysocephalus} 50 gms.

Tree by stream; rather open stand.

Oconaque, 6 mi. N. Limbani, Dpto. Puno, Peru1586 ♀ 1st. ov. 1 mm. ^{Picus} ~~Centurus~~ ^{rivoli} 90 gms. - slight fatJuly 171587 ♂ test. 1, skull clear ^{Finch; olive green, blue head} ~~Thraupis~~ ^{cyanocepala} 40 gms., slight fat.

Bushes near trail; open stand.

1588 ♀ 1st. ov. 1/2 mm. ^{Cyanolyca} ~~viridi-cyana~~ slight fat

Tree on slope near river; not deep dark woods.

1589 ♀ ov. 1/2 mm. ^{Blue back, black head, yellow breast - ~~but~~ tanager} ~~Butorupis~~ ^{montana} 103 gms.

1589 ♂ group 3+ seen. Tree on slope near river; open not denser dark woods.

1590 ♂ test. 4 ^{Cassini - yellow rump} ~~Archipterus~~ ^{chrysonotus} 112 gms.1591 ♂ test. 8x5 ^{name} ~~Abodon~~ ^{aerarius?} 191-81-23-18, 40 gms.

under stump in wet woods.

1592

~~Grasshopper-like earlier~~

July 17

skel.

1592

♀ 1st. ov. 5; ^{Cox} ~~ent. oviduct.~~ ^{Cox?} mod. fat.

Brown, red legs; red skin throat, gray edged feathers on head & throat. Red brown below. wing 235. Tail 245. Dark woods

July 181593 ♂ test. 20 ^{Thomomys aureus?} ~~Oryzomys~~ 370-200-37-25, 132 gms.1594 ♀ one. ^{Cacat.?} ^{white throat, long hind toe} ~~Pseudocolaptes~~ ^{brissonia} slight fat; 45 gms.

D. clear stand leaved trees on slope near river.

1908

C. Koford
1952

52
53

Specimens

July 18 Oconeque, 6 mi. N. Limbani, Dpto. Puno, Peru

1595 ♂ test. 3 ^{oulet} Glaucidium ^{jardini} ~~brasilianum~~ slight fat; 50 gms.

In open on branch of bush by trail in daylight.

1596 ♂ test. 4 Trogon personatus slight fat 66 gms

1597 ♀ o.n.e. ^{woodpecker} Piculus rubiginosus slight fat 46 gms.

Branch of bush by trail. slope. green trees, mod. closure.
^{blue bush, hair breast.}

1598 ♀ o.n.e. Delothraupis castaneiventris slight fat; 29 gms.

1599 ♀ o.n.e. ^{Blue & yellow tanager} Buthraupis montana 101 gms.

[Agualani], 3 mi. N. Limbani, Dpto. Puno, Peru

1600 ♂ juv.; t. 1 ^{olive sparrow; white throat} Allapetes torquatus 35 gms.

1601 ♂ t. 2 ^{small Tanager} Catharus fuscater 34 gms.

July 19 orange-red bill & eyelids. Brown tarsi & feet.

1602 ♂ juv.; t. 1 ^{Blue; long bill} Diglossa caerulea slight fat. 20 gms.

1603 ♂ t. 1 Atlapetes rufinucha 28 gms.

1604 ♀ o.n.e. ^{Poecilothraupis} Anagra igniventris

July 18
skel. 1605 ~~tanagers - blue yellow bill 1594~~

July 24 Lake Umayo, 15 mi. S. Juliaca, Dpto. Puno, Peru

1605 ♂ test. 8 Centropelma micropteron 650 gms. fat

1606 ♀ ^{egg in ovid.} ~~2 fall. 15 mm. +~~ " 850 gms.

1607

1608

1609

1606 ♀ ^{egg in ovid.} Centropelma much fat
2 fall. 15 mm. +; 2 or + call. fall. 850 gms.

1607 ♀ ^{3 fall. 20 mm. +} Centropelma much fat
large oviduct; 1 or + call. fall. 850 gms.

skel. 1608 ♂ test. 10 Centropelma mod fat
850 gms.

skel. 1609 ♀ 1st. ov. 3 mm. " mod fat
700 gms.

116 mm. submax
1850

Lizard - Aug 9

SA 76

3 emb. RH 3L, 14mm. length bulges.

10/1/50

10/1/50

10/1/50

chy
1616-1621/63

Specimens

July 30 Urubamba ^{River 50 mi. NW Cuzco,} ~~Pattey~~ ^{5000,} Dpto. Cuzco, Peru

+skel. ^{skin + skel.} 1610 ♀ ^{emb.} 130 mm. tot. l. Dasypsecta 580-22-127-44, 91bs.

Nip. 5 long. Red chugging grain, belly, chest, chin.

August 4 [Ocumpate], 10 + 5 mi. ESE Juliaca, Dpto. Puno, Peru

1611 ♀ ^{19st. ov. 3mm.} ^{ent. ovid. + 5 corp. lot.} Centropelma 725 gms.

1612 ♀ ^{19st. ov. 3mm. + corp. lot.} Centropelma 700 gms.

skel. 1613 ♀ ^{19st. ov. 3} " 800 gms.

skel. 1614 ♀ ^{19st. ov. 3} " 650 gms.

skel. 1615 ♀ ^{19st. ov. 3} " 600 gms.

August 7 ³ 5 mi. SW Juliaca, Dpto. Puno, Peru [Chullunckiani]

1616 ♀ ^{vag. imp.} ^{nip. 3mm.} ^{lt. horns 3mm. wide.} Cavia (Bala) musteloides 232-12-41-25, 320 gms.

mouth hole fast adobe wall on flat grassy area in sun 7 a.m.

1617 ♀ ^{19st. ov. 1mm.} Nothura maculosa agassizii 260 gms. - slight fat

1618 ♀ ^{19st. ov. < 1/2 mm.} " " 195 gms.

skeleton 1619 ♂ ^{test. 3} " " 235 gms.

August 9

1620 ♀ ^{v. imp.} ^{nip. 1/2} Phyllotis pictus 198-85-24-22, 43 gms.

1621 ♀ ^{v. imp.} ^{UH wide} ^{nip. 1; 1mm.} Phyllotis pictus 220-90-25-22, 55 gms.

1620-21, thick knee - high grass in draw. 5 mins. discarded.

August 10 5 mi. ESE Juliaca

1622 ♀ ^{19st. ov. 2} Centropelma 575 gms.

August 17 5 mi. ESE Juliaca

formalin 1623 Centropelma much fat; 600 gms.
Long bill 650 gms.

1624 ♂ ^{test. 7x11} " wings molting - mod. fat.

1625 ♀ ^{5 corp. lotca,} ^{19st. ov. 2mm.} " 625 gms.
white breast

1626 ♂ ^{test. 4x2} 575 gms.

2 tape worms loose in abdomen. cavity (in Baume).

skel. 1627 ♀ ^{19st. ov. 4} Centropelma mod. fat. 600 gms.



73
0
—
45 0



1952

1838-9
Pror.Specimens
PERU - CHILE

August

July

17

5 miles ESE Juliaca, Dpto. Puno, Peru [Lga. Ocumate]

skel.

1628

♀ coll. fall.

+ 3 mm. fall.

Centropomus

mod fat 600 gms.

skel.

1629

♀ coll. fall. +

4 mm. fall.

Colymbus occipitalis

mod. fat. 525 gms.

1630 ♂ test. 8x6

secondary part white. Red eye! Grey bill + feet.

mod. fat 360 gms.

This kind common here; some fights + mutual head-bobbing seen.

Aug. 19

formalin

1631

3 mi. SW Juliaca, Dpto. Puno, Peru

Tachycichis

Under boulder, grassy dry slope.

Aug. 23

30 mi. S. 3 mi. W. of Mazorru, 14300', Dpto. Puno, Peru

1632 ♂ t. 6x3

P. sublimis

144-48-21-24, 31 gms.

Disc. 26 gm. ♀, no emb., slender horns, noq. imp. Rocks at base hill.

1633 ♀ slender U.H.

P. bitorquatus

203-105-24-26, 36 gms.

Aug. 24

8 mi. NE Tarata, 13000', Dpto. Tacna, Peru

1634 ♀ hip. 2; Akodon berlepschii

165-69-21-15, 25 gms.

1635 ♂ t. 5x3

"

159-71-22-15, 21 gms.

1636 ♂ t. 4x2

Phyllotis darwini

199-102-25-24, 29 gms.

Ft. rock wall where taken shortly after dark. Discarded 18 gm. ♀

1637 ♂

P. darwini

236-120-27-28, 51 gms.

Sept. 16

9 mi. S. Iquique, Dpto. Tarapaca, CHILE

1638 ♂ t. 3

Desmodus rotundus

80-0-19-18, 83 gms.

1639 ♂ t. 8

"

82-0-19-18, 41 gms

In cave with many others. Coll. by G. Mamm F.

Sept. 20

Caritaya, 12000 ft. 75 mi. SE Arica, Dpto. Tarapaca, CHILE

1640 ♂ test. 8x4

Akodon andinus

168-68-22-16, 37 gms.

Disc. ♀ 151-46, 16 gms.; ♂ 156-56, 18 gms. All taken under boulders on slopes in dry sites.

1641 ♂ t. 9x4

Phyllotis darwini

225-115-25-26, 48 gms.

1642 ♀ ut. horns

Phyllotis

216-111-26-25, 35 gms.

1643 ♂ t. 10x6

Phyllotis

240-128-27-26, 50 gms.

Oct. 2

~~From, param 8 131-49-19-14 Abc. - param Ab. and param.~~

disc. ♂ ^{d.?} Phy. 210, 112, t. 10x6 -

♂ 53 gms test. 9x7 230-109

Oct. 3 ~~1 param~~ disc/param 2 A and ♂ 22 gms, 138-50, test. 8x6
disc. 1 ♂ ^{Phy} ~~Phy~~ ♀ sup 1, vimp., 16 gms., emb. 2 L 1 R 8 mm long C-R

Oct. 4 ^{T.} Phy. d. ♂ 202-100-26-26 t. 9x6 disc. Param

Oct 5 - Supers. disc.

2 A. and. ♂ 137-55, t. 8x5

" " ♀ 134-53, vag. perf., vip. 2, param

Oct 8 - Toc. disc.

Ab. and. ♀ - main ar, vip 2, vag p., 2 slight small RH

♂ - test 9x6

138
1048

Specimens - CHILE

Sept. 20 Caritaya, 12000', 75 mi. SE Arica, Prov. Tarapacá, CHILE

1644 ♀ ^{v. imp. nip. 1} Akodon ^{barluchii} ~~andinus~~ 157-60-20-13. ^{ut. scars.} parous; skull 9/10 opaque

1645 ♀ ^{1st. ov. 1 1/2} Upucerthia ruficauda slight fat; 32 gms.

1646 ♂ test. 3 ~~Leptosthenus~~ Asthenes modesta 16 gms.

October 2 Ojos San Pedro, 12500 ft, 55 mi. NE Calama, Prov. Antofagasta

1647 ♂ test. 8x6 Akodon andinus ^{dob. chronyx} ~~(Hesperomys?)~~ 126-49-19-14, 16 gms.

Sand near rocks, 50 yds. from stream, tala near, in clay.

1648 ♂ t. 6x8 Akodon andinus " 132-50-20-14, 19 gms.

1649 ♀ ^{v. imp., nip. 1} Akodon andinus " 140-56-19-15, 17 gms. ^{parous}

1650 ♂ t. 4x3 Hesperomys lepida durillus ^{tail broken, long} 16-37-15-17, 8 gms.

1651 ♂ t. 8x4 Eligmodontia puerulus ^{puerulus} 157-74-23-18, 20 gms.

Sand by boulders & tala; flat, 50 yds. from stream; ^{ab. andinus.} same trap as on 14000 ft.

October 3 Toconce, 60 mi. ENE Calama, Prov. Antofagasta, Chile

1652 ♂ t. 9x6 Phyllotis sublimis 156-45-23-24, 46 gms.

Sand next to rock near bunch grass, tala; dry tala cuttings near.

1653 ♂ t. 8x6 Phyllotis ^{darwini} (1145 MK) 231-118-25-26, 50 gms.

Sandy ground by boulders. ^{a 35 gm. ♂ (testes 9x5)} ~~inf. disc.~~ discarded.

Sept. 23 Alta Camina, 11000', 110 mi. NE Iquique, Prov. Tarapacá, Chile

1654 lizard Liolaemus

1655 imm. " "

October 2 Ojos San Pedro,

1656 imm. Liolaemus [?]

October 5 Tatio Greyers, 14000', 57 mi. E. by N. Calama, Prov. Antof. C.

1657 lizard Liolaemus

October 6 Ojos San Pedro (nr.), 14000'

1658 imm. Liolaemus

October 8 Toconce, 14000' -

1659 ♂ ^{test. 22x12} Abrocoma cineracea 276-79-28-30, 203 gms.

Oct. 10 - disc.

P. dunn. ♂ 25-96 t. 9x5
♂ 22-112 t. 9x6
25-24

alt. and. ♂ 137-52 t. 9x7
♂ 129-50 t. 9x6
♂ 140-55 t. 9x6
♂ 138-53 t. 9x7

Oct. 11

alt. and - 2 ♂
♀ 132-50 v imp, nip 2. lact. t.
♀ 139-53 v imp, nip 1 1/2. emb. 1 LH 3 RH 13 C-R

Oct. 12

alt. and. -
~~2 l. l. d. d. d.~~

Oct. 15 ~~R. subh. ♂ test. 11x7, 162-51, 54gms.~~

Oct. 19. Disc. alt. and ♀ 140-52 mp 2, vag. imp, much lact. disc.
ut. bulges 3x2, 3R 2L form.

P. subh. ♂ 158-47 test. 10x6 164-5
♂ 164-51 t. 10x6
♂ 154-43 t. 10x7
♂ 166-53 t. 10x6

P. dunn. ♂ 210-107-26-27 t. 11x6
♂ 222-113 t. 9x6
♂

Oct. 27 P. dunn. - disc.

♀ 212-117, v. perf., nip. < 1/2, no emb.
♀ 210-111, v. imp., nip. 2, emb. 1 R 1 L 13 C-R
220-116, v. " , mp. 4 1/2, 3 emb. RH 12 C-R
♂ 241-116, test. 10x7 + 2 smaller ♂
alt. and. ♂ 148-57, test. 8x6

C. Koford
1952

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Specimens

October 9 Toconce, 14000', 60 mi. ENE Calama, Prov. Antofagasta, Chile

1660 ♂ test. 9x7 Ctenomys fulvus 301-92-44-9, 2859ms.

October 10

1661 ♂ t. 8x5 Eligmodontia puerulus ^{puerulus} 162-80-25-18, 20gm.

1662 ♂ t. 7x5

"

169-82-25-18, 23gm.

1661-2

Mouths burrow in soil at base green tola bunch, mod. sandy.

1663 ♂ t. 9x7 Phyllotis sublimis ^{back broken} 155-48-23-20, 40gm.

Loose sand among clumps spring vuna grass

October 11

Phyllotis sublimis

1664 ♀ emb. 2RH 1LH, 22mm C-R 154-46-23-23, 54gms.

Base green tola near bunch grass, rock, on mod. sandy loose soil.

October 13

2 emb. RH, 40mm. tot. length 4

1665 ♀ v. imp. Ctenomys fulvus

284-86-40-9, 225gms.

Caught Oct. 10; starved in captivity.

October 24 Cerro Tatio, 14500', 50 mi. E Calama, Prov. Antof., Chile

1666 ♀ 1st. ov. 15 Tremotus pentlandii no fat 1250gms.

Walking on road 6:30 a.m. with 1100gm. ad. ♀. Stomach empty. Several types worms in each.

Shed of other sandy, ~~not so~~

October 26 Tatio Geysers, 14000', 57 mi. E. by N. Calama, Prov. Antofagasta, Chile

1667 Liolaemus?

1668 Frog

1669 Frog

1668-9, edge lukewarm swift streams 2-5/yd. there at edge.

October 27

1670 ♂ t. 8x6 Phyllotis ^{darwini} (sp.?) 236-117-26-24, 51gms.

Under rock on slope near P. darwini; bunch grass near.

October 28 Cerro Tatio, 14000', 50 mi. E Calama,

skel. 1671 ♂ t. 35x15 Pterocnemia pennata 42lbs.

With 2 others on rocky ramp of 5-10% slope.

Tapeworms in small intestine. 2 caecae 30" long x 3" wide max.

Nov. 4th ^{gair} Ct. fulv. ♀ 210 gms.
vag. ref. rep. 3 utt 3 mm inside. D. vis. brand, tola.

210

C. Koford
1952

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Specimens

October 29 Tatio Geysers, 14000', 57 mi. E. by N. Calama, Prov. Antofagasta, Chile

1672

Frog

1673

Frog

In $80 \pm ^\circ\text{F}$. swift clear salty tasting stream fed by geysers.

Toconce, 14000';

October 29 - ♂ t. 20x10 Abrocoma

275-80-27-29

1674 Died today; in captivity since Oct. 16, 1952. LFF missing.

October 30 Cerro Tatio, 14000';

~~skel.~~ 1675 downy

Pterocnemia pennata tarapacensis

345 gms.

Starved in captivity. One of 9 captured Oct. 26 by local man.

November 3 Ojos San Pedro, 12500', 55 mi. NE Calama, Prov. Antofagasta, Chile

1676 ♀ 1st. or. 2 mm.

Recurvirostra andina

315 gms., slight fat

1677 ♂ 1st. or. 9 mm.

" "

330 gms.

1676 Iris vermilion; legs pale gray.

+ - 77 near shore salty lake on rocky pampa.

November 4

Legs + bill dark red-gray; iris brown.

1678 ♂ t. 11x5

Larus andinus serranus 400 gms. - slight fat

Near 2 half-grown well feathered juvs., calling much.

November 5 Ojos San Pedro, 12500';

skel. 1679 downy

Pterocnemia pennata

270 gms. (2 days old.)

Nov. 15

Captured on pampa, 1 of 15 juvs. young.

skel. 1700 ♂

Abrocoma

- died in captivity at Berkeley Nov. 20, 1952
See O. P. Pearson note

November 7

skel. 1680 ♀

1st. or. 2 1/2

Recurvirostra andina

270 gms.

One of pair at small salty lagoon.

November 8

Salar de Axotan, 70 mi. NE Calama, 12700', Prov. Antof., Chile

skel. 1681 ♀ 1st. or. 10

Phoenicoparrus andinus

6 1/2 lbs.; mod fat

skel. 1682 ♂ t. 22x16

"

"

7 lbs.; mod. fat

Together near 20' pool on white Salar Pampa; no others nearby.

C. Koford
1952

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Specimens

November 11 Toconce,
14000', 60 mi. ENE Calama, Prov. Antofagasta, Chile

1683 ♀ ^{emb.} RH 1 LH bulges 15, 10, 10.
10 L, (after resorb.)
Abrocoma cinerea 295-84-30-29

Captive since

Died of heat & crowding in transit.

November 13

Panama

Summit Experimental Gardens, Canal Zone

1684 ♂ t. 5 Uroderma bilobatum 60-0-12-18, 18 gms.

1685 ♂ t. 5 " 60-0-12-17, 13 gms.

1686 ♀ no emb. " ? -0-12-18, 18 gms.

1687 ♂ t. 4 " 61-0-13-18, 17 gms.

1684-87 under cut & bent-over palm leaves. 100% present.

Joan Mina, 5 miles NE Gamboa,

Canal Zone

1688 ♀ one. Nyctibius griseus 185 gms. - mod fat

On tip bare tree limb at night.

1689 ♂ t. 4 Nyctidromus albicollis 62 gms, mod. fat.

November 14

1690 ♀ one. Chloroceryle americana 36 gms.

1691 ♂ t. 3 Dendrocolaptes certhia 71 gms.

skel. 1692 ♀ o.n.e. Helioornis 128

skel. 1693 ♂ 1st. ov. 1 1/2
+ 65 corp. 1st. " Prim. + sec. all ^{shed} molted. 148 gms.

November 15

skin & skel. 1694 ♀ no emb. Bradypus griseus 590-65-110-10

skel 1695 ♀ ^{1/2 ov. 2} Nyctibius griseus mod fat 214 gms.

1696 ♀ one. " griseus mod. fat 218 gms.

1697 ♀ 3 young, 1st. 0.5 tot. l. Didelphis? 523-286-42-30, 275 gms.

November 16

1698 ♀ one Trogon rufus no fat, 58 gms.

1699 ♂ test. 8 Phloeocoastes
~~Scaphiura~~ melanoleucus no fat, 240 gms.

1700 recp. 58.

END FRIP - PERU, CHILE, Canal Zone

Heron - Nov. 14 - Juan Maria

Tigrisana

length 28" tail $4\frac{1}{2}$ " wing 290mm culmen 87
tarsus 105. Legs yellow. alim. feet yellow below (& lower), dark
brown above. Iris yellow. Chin white. Tail black with
narrow transverse bars ($5\pm$). Belly & lower tail cov.
white. Neck, back, up. wing cov brown & ^{black} ~~white~~ mixed.
Prim. black, white tips. Sec. with 1 white 3 cinnamon narrow
bars & white tips.

JOURNAL

Journal

September 29, 1951.

Aricoma, 15000', Dpto. Puno, Peru

Clear calm morning, wind by 10 a.m., 5/10 cumulus by 2 p.m.
 Min. temp. -2°C . Drove down Limbani road to traps. Catch
 1 \varnothing Chinchillula (M.K. 1066), 1 A. boliviensis. Returned to
 House. Traps at La Flat held 0 - took up all but 10 in passages
 in deep grass on flat. Trapping has been relatively poor since
 first big snowstorm last month. Looked for vicuñas in Basin
 1:30 - 3:30. Max. temp. $+13\frac{1}{2}^{\circ}\text{C}$. Clearing at sunset.

September 29, 1951. Min. temp. $-2\frac{1}{2}^{\circ}\text{C}$. Trap line
 held 1 Chinchillula (M.K. catalog), 2 P. pictus, 1 A. jelskii,
 1 P. sublimus. Watched vicuñas near summit 10:30 -
 11:30. Returned to House. Hail on & off all afternoon.
 Max. temp. $+13\frac{1}{2}^{\circ}\text{C}$.

September 30, 1951. Sunday. Drove to Cuervo &
 back. Shot a Geometrid, Asthenes, & a plover near Lake
 Aricoma. Put them up. Day clear in morning and
 about 3/10 cloudy in afternoon. A P. sublimus \varnothing in
 a single trap set yesterday; discarded. Leydis seen daily,
 especially in warm forenoon. Max. temp. $<13\frac{1}{2}^{\circ}\text{C}$.

October 1, 1951. Min. temp. -3°C . Light snow on ground,
 quickly melting. Clear. Fair breeze up canyon 7 a.m. & all
 day. About 3/10 cloudy at noon, 8/10 3 p.m. Sprinkling
 of snow in late afternoon. Max. temp. $+11\frac{1}{2}^{\circ}\text{C}$. Watched
 vicuñas in Basin 6:30 a.m. - 3:30 p.m.

October 2, 1951. Min. temp. -4°C . Clear; 5/10 overcast
 at noon. Fair breeze. Watched vicuñas in Basin to
 11 a.m. Took up 10 traps on La Flat, left ^{since} Sept. 28; held
 1 Neotoma. New moon.

Journal

October 3, 1951

To nr. Asillo, Dpto. Puno, Peru

5/10 overcast at 7 a.m. Prepared for raining trip. Departed 11:30 from Areana. Light snow on ground at foot of Lake Areana. Rain, thunder, lightning at Areana. No gas to be had so drove on to Paluma. We had tea with Drs. Dammert & Orellana. They had teal, snos, Thussonium, & dove in food box, fresh vicuña & huemul hides. They gave us gas at Paluma & we drove on to lake about 3 miles beyond Acillo & spent night there. At ponds near Rosario many Anas, Nettion, & black-crowned night heron (many juv.), as well as gallinules & yellow-legs. Raining at Paluma when we left.

October 4, 1951

To Chuquibambilla, Dpto. Puno

No rain at night but overcast. Many bird sounds from lake in night. The big plovers screamed much at night. Other sounds probably coots. Great coots common (100+) on lake. Two helped ^{carry} ~~carry~~ green lake scum to a 3' diameter island upon which were 3 or 4 downy young. At least a dozen similar green islands about 50 yds. from shore & 50 yds. apart. At least 3 pairs cinnamon teal seen, 100+ of the black & white headed ducks, 100+ Nettion, ruddy(?) ducks 50+ (one alongside other with tail vertical & pumping head vertically up & down). Two kinds small grebes, one reddish brown with black & white head, other gray & white with black & white head. A Tringa washing on green lake scum. 1 Wilson snipe on shore. 10+ Larus, some with solid black heads. Morning calm & clear. We drove to Ayaviri (14 miles from Taripata - Areillo junction) and stopped. Then 10+ miles to Chugui-bambilla where director not present. We drove 16 miles

Journal

October 4, 1951

To hr. Asillo, Dpto. Puno, Perú

to Llalli on rather poor flat road, then took road back to Ayaviri (26 miles, road thru Umachina & better than Chugibambilla road). Drove on then to about 6 miles on road before Asillo, 13000', & camped at foot of steep ^{N.} slope of cliffs & jagged boulders. Set 25± snares among rocks & shrubs on slope. Saw 2 old nests of hawks (?) in niches in rocks near foot. Many whitened points & owl droppings. Saw several viscachas. Most vegetation dried up. Saw falcon chasing flicker. Heard barn owl. Clear most of night.

October 5, 1951.

To Aricoma, 15000', Dpto. Puno

Traps held 2 Phyllotis (orilae?) ♀ (decided 1, other ♀ 1280), & 1 Akodon boliviensis (♀ 1281). Shot a Petrochelidon, another hummer, chimney, & falcon. a gray finch & chimney in flocks on ground in grass at edges rocks. At least 3 falcons seen & 2 Petrochelidon, 10± other smaller hummers. Saw at least 3 of a rufous-breasted flycatcher with black & white on head (specimen from Calacala). Returned to near Rosario & I fished for 2 hours taking 14 rainbows up to 12" long. Pond near Hacienda just beyond Rosario had a small green-legged coot in pond nearby. Flamingoes in (12±) in nearly dry lake before reaching ^{Asillo} Asillo (1 mile before). Returned to camp after dark.

October 6, 1951. Overcast most of day with light snow in late afternoon. Put up specimens. Stock near House.

October 7, 1951. Min. temp. +1½°C. Light snow on ground & stratus overcast in morning; occasional snowflakes. Watched vicuña group in N. Canyon 8-12 M. ~~Low~~ Snow, rain, & overcast all day. Max. temp. +10°C.

Journal

October 8, 1951.

Ariconia, 15000', Dpto. Puno, Perú

Min. temp. $-1/2^{\circ}\text{C}$. last night. Lightly ~~snowing~~^{snowing} & all overcast at daybreak & on into morning. Mary caught 2 A. jelskii in 4 live traps put out in SE Canyon last yesterday. Light snow & rain & no prospect clearing. At 3 p.m. departed with family in jeep to explore cordillera west of Ayaviri & Juliaca. Drove to near lake 3 miles beyond Asillo (9 p.m.) and camped. Overcast. Heavy rain in night.

October 9, 1951

To nr. Ocoruro, 13700', Dpto. Puno

Still overcast & occasionally sprinkling. Drove to Ayaviri & bought supplies. Then took Umachiri road to Llalli (25 mi. from Ayaviri), and on. Turnoff to Ocoruro 4 1/2 miles on. A mud town about 20 miles from Llalli, 1 mile beyond turnoff toward Ocoruro. A lake with reeds, casts, bushes, 10 miles beyond Llalli. We drove up Ocoruro road to O. (25 miles from junction - 70 mi. from Ayaviri) Ocoruro a Cuzco-sized unpainted mud village with control station. Drove on 5 miles & camped (13750') in rolling grassy country with thorn bushes & few rocks. Overcast but breaking up to E. & W.

October 10, 1951

Heard owls in night. Clear by morning & about 0°. Departed 0830 & drove toward Huata slowly. 18 miles from Ocoruro we were at 15200' in rolling country where more Pycnophyllum than grass. Naked rocky hills higher than general level. Some vicuñas and several herds of alpacas. Dry appearing area at near San

Journal

October 10, 1951

Ocururo-Imata, Dpto. Puno, Perú.

Antonio de Esquivalche. Few birds. Few habitations. Road fair dirt single lane. By 10 a.m., sky $\frac{7}{10}$ cumulus + fair breeze. 31 miles from Ocururo, 15000', passed 200 yd. long lake with 12 \pm ^{giant} coots + 4 coot islands. One coot adult in water with 3 downy young. One sitting on island as if on eggs + another came up beside it. The coots make loud low sounds - almost human. 60 miles from Ocururo passed a 1 mile long lake with 20 \pm flamingoes, many geese + ducks. Very windy so did not stay. Imata 67 miles from Ocururo. Camped on sandy ground 6 miles beyond Imata at edge of hill of fantastically shaped rock columns up to 30' in height. Clear here + to S. Set 30 snap traps near rocks + ^{to} S.

October 11, 1951.

Traps held 2 P. darwini. Shot an Agriornis. Found sarcos nest with egg + adult on. Clear in morning; below freezing night. 11 am departed for Arequipa road. Pass passed thru low sandy hills with bunch grass + tola rarely over 6" high to 13 miles from Imata, then a nearly unvegetated flat area. 19 miles from Imata reached Arequipa road, 14900', Imata 35 km., Puno 164 km. Drove toward Juliaca. Saw 200 \pm vicuñas in 7 miles of highest road. Summit, km + $\frac{1}{2}$ from Arequipa, 15350' by altimeter. Tinicopala at km. 123 from Puno. Km. + (Total 278 km. Puno - Arequipa). In Tinicopala area, nearly solid cover of 2' high tola with narrow thick leaves + (now) small yellow flowers. Stopped at 15000' on Tinicopala side of

Journal

October 11, 1951 To nr. Sta. Lucia, Dpto. Puno, Peru
 Summit. Half cloudy in afternoon; cumulo-nimbus to
 N. & E. Cloudy area seems to end near Arguysa-Puno
 road and on Arguysa side of cordillera. From Tincopelca
 road climbs to 14800'±, then through grassy rolling
 country. Fork to Juliaca (86 km.) + Puno (101 km.) at km.
 101. We went toward Juliaca and camped about 8½
 miles from this fork on edge of lake ^(L. Salacocho) 2+ miles long at
 13500'. Red-brown small grebes, grey + white grebes, giant
 coots, swallows, Conilodactylus, Bonotrichia, Nettion, Larus
 here. Coots adding to ^{plant} islands now scarcely above level
 of surface. Set 20± traps in burrows in boulders, among
 grass clumps, near rocks + rock subverts.

October 12, 1951. Friday. To Juliaca, Dpto. Puno
 Traps held 1 P. darwini, 1 Nettion, 2 P. pictus; all
 examined & discarded. Shot one swallow (specimen). Drove
 on through grassy dry hills over rough road to Juliaca.
 Swift river 20' wide at Sta. Lucia. Visited Duffies, shops,
 camped 3 mi. from town at bridge on road to Huancayo.
 Warm, 3/10 overcast, at Juliaca.

October 13, 1951. To nr. Asillo, Dpto. Puno, Peru.
 Clear night with near-full moon. No frost; probably
 did not freeze. Saw a bullfrog-sized frog in bottom of river
 under bridge near camp, & several rainbow trout. Returned
 to Juliaca for business. Departed 10 a.m. toward Asillo.
 Camped 6 miles before Asillo. Heavily overcast, thunder +
 lightning. Rain at sunset until after midnight.

Journal

October 14, 1951

To Aricoma 15000' Dpto. Puno, Peru

$\frac{1}{3}$ overcast at sunrise. Shot a perdiz (skeleton) + saw a second with it near camp. Drove on to Crucero. Fished for an hour to 5 miles below Potosi + took 12 rainbow up to 12" on fly. Overcast at Crucero. The town had hundreds of Indians + improvised tent stalls as this was fiesta of Nuestra Señora de Potosi. This would go on another 4 days. At our Aricoma camp found hail on ice deep on much of the ground.

October 15, 1951

Aricoma 15000' Dpto. Puno

Clear at 7 a.m. Water had slight ice. By noon, $\frac{5}{16}$ sunnier + rain for $\frac{1}{2}$ hour. Took walked to W. de Indes. + back. Saw one Agriornis. Collected some plants. Prepared to depart tomorrow. Because of bad weather + fog here while other vicuña areas are dry + clear, we decided to leave this area but first ^{collect} traps further in the Limbani area. Light snow in evening.

October 16, 1951

To 4 mi. SSW Limbani, 13000' Dpto. Puno

Light snow on ground + all overcast in morning. Towed trailer to near road + left it. Drove 8 miles down road toward Limbani looking for places to camp with trailer. Returned for trailer. Rain + snow at Aricoma at noon. Towed trailer to site about 5 miles up road from Limbani, 13000'. Many granite boulders + antelope-sing, grassy slopes, + bushes (small white flowers, aromatic). I set 30 snap traps near boulders + shrubs. Mary set about 30 traps too. Overcast in evening. Heard flicker.

Journal

October 17, 1951

7 mi. SSW Limbani, 13000', Dpto. Puno

Overcast in morning but light at 5 a.m. My trap line held 3 P. dermieri, 2 A. jelskii, 1 P. pictus. Mary's traps held: 2 P. dermieri, 1 A. boliviensis. I added 4 meat-baited Schuyler's to my 30. Mary took up 15 of her traps + reset in boulders + bushes below road on damp slope. These 15 traps held 2 A. jelskii by 4 p.m. Overcast all day with fog about 500' overhead. Certhia, Phrygilus unicolor, Zonotrichia capensis common; flickers present. Shot a gray headed yellow finch (♂ 1291CK).

October 18, 1951

To nr. Segario, 5000±', Dpto. Puno

Drove to Aqualani, Inca Co. warehouse 5 miles by road below Limbani, + left car there. Family stayed at trailer. At 9:30 a.m. departed down trail. Reached the tunnel at 10 a.m. About 2 hrs. down trail crossed suspension bridge, passed huts where some cultivation, + passed stone buildings at Ocanque. Hills mostly clear of trees, apparently because of repeated burning, + everything green. I hiked about 2 hrs. beyond a finca called Quiton^(coffee trees) + camped under overhang of cliff below a suspension bridge (about 6th one). Trail good, often ^{only} a notch cut in side of cliff, but floating rocky so hard on feet. Clouds all day. Below Quiton saw palms, 40' high tree ferns, trees with horse-chestnut like leaves with hollow trunks with partial septa across. Oropendolas common. Saw one motmot. A black phoebe on rocks in river. Dark birds with white head + upper

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Peru

October 18, 1951

To nr. Segrario, 5000[±], Dpto. Puno,

breast along edges river in 10+ 2's, a few small bats flying in evening & a caprimulgid(?) catching insects from brush perch on cliff side at dusk. Saw 2 large *Oryzomys*-like rats after dark. Rain in night. At Lumbani had visited Sr. Huaracha, the ~~an~~ alcalde & hotel & store owner. He had many animal skins decorating his office. These included several snakes of large size, 2-toed sloths, anteaters, possum, weasel (very dark - nearly black upper parts), squirrel. Most of these from the montaña. Weasel said to be from Lumbani. Warm at night; sweater, no blanket, enough cover. Insects did not bother me. Saw 2 kinds large doves, 1 with distal band on tail, other without, both gray. Found 2 snakes, ring-necked snake size but drab, on trail in day.

October 19, 1951

To Ocanaque, 7000[±], Dpto. Puno

Bats flying near cliff at dawn. Clarence Lee Wood was to come up to Ocanaque this day I had been told, so I hiked back to there. Many *O. peruanus*. A yellow woodpecker with red on head & back (centurus). Small bright green bird with red & yellow on head. Blue tanager. At Ocanaque found Woods staying at Bella Pampa this night. Free board & lodging given me at the Inca Co. station. I set 20 snap traps. Drizzly rain at night. I was tired. Shot hawk near ⁽⁵¹²⁹⁴⁾ ~~Quinton~~.
October 20, 1951.

Traps held 2 brown large mice & 1 young possum. Put these up, & 2 bats (*Myotis*?) taken yesterday.

Journal

October 29, 1951

Oconeque, 7000±; Dpto. Puno

from cavity in rock overhanging trail. Saw droppings on trail below hole + shot bats (2 ♀, 1 ♂, 1 discarded). (test. 2 ♀). Possums said to be common here. Bears had been killed ^{on} several ~~times~~ ^{occasions}; said to raid corn patches, especially in March + April (end wet season). Small wrens common ~~in~~ at Oconeque. Shot a peewee + swallow, both common. Banana trees here but fruit green. Some papaya + avocado trees. Saw a torrent deer standing on rock in middle of wide rushing river; it dove when I 50 yds. away after quick movements of its head. Set 2 traps. Shot a nut-mat in tree near river + saw another. Voice a hollow deep slightly double pup-pup, like man slow~~ly~~ chopping on hollow log in distance. The shot one, wounded, fled 2' into hole in rock wall when I approached - to out of sight! In a dark damp canyon saw white excrement (no pellets), + looking up saw an owl (♀ 1301). Woods, wife, + son (0±) arrived on mules from Bella Pampa about 3:30 p.m. Woods about 45, energetic, talkative, + full of hunting experience. Fond of guns of which he had several of finest. Knew animals fairly well. Said to deer at Oconeque, different than huemul up higher. Two kinds peccar, tapirs (sachavaca), ocelots (common), ~~but~~ not far from Santo Domingo. Assassins, guans, chachalacs. Monkeys rare. About 30 touquis (rock of rock) seen on way up

Journal

October 20, 1951

Ocanegue, 7000[±], Dpto. Puno, Peru.

Dactylopsax
 today. Near S.D. a screaming in night which local people said was large kind of rat. Others in that area. Never saw a "tigre". Had been here 23 years, of + on. Said 3 seizes tinamou in high country. A tinamou + quail in S.D. region, + 2 kinds peccaries (white-bellied in herds of 100+ at times). From Ocanegue trail went down to ~~San~~ Oroya, about 3000', then up to S.D., over 5000'. About 6 hrs. foot hike from Ocanegue to Bella Pampa, thence 2 1/2 to S.D. From Aqualani, S.D. about 30 miles. Lodging at Inca Co. a little below Bella Pampa (only power house there). Most game down from S.D., but bats there in houses + tunnels. His nephew, Dorso, 25 yrs. old, left in charge there (Limeño but speaks good English). Apparently machine shops + all sorts equipment at S.D. (gold mine). We talked - that is he told me his hunting exploits - until midnight.

October 21, 1951

To Limbani, Dpto. Puno, Peru

Woods + family up at 5 + off at 6 for Aqualani. My traps held 2 rats (Mary K. catalog). Shot a short tailed wren. At 7:30 started for Aqualani afoot. Saw oropendolas + dark birds with white heads in water, 1/2 hour above Ocanegue. People had told me large "conejos" there. Possum called "challa-challa" + a pest. A black possum at S. Domingo. Arrived ^{saw flock green parakeets at Aqualani warehouse.} Aqualani warehouse about noon + drove up to trailer. Mary had taken 2 small *Dryzomys* (?) in

Journal

October 21, 1951 Dpto. Puno, Peru
4 miles SSW Limbani, 13000'
my absence. No rain there but cloudy off + on in daytime.

October 22, 1951

Put up specimens. Took up all traps (but 2). Set traps (one 39, many 27) about 1 mile S. of Limbani where had trapped before. Clear morning, cloudy afternoon. Clear night.

October 23, 1951.

Traps (2) at 13000' held: P. damianii ♀ (discarded). Traps 1 mile S. Limbani held 3 Oryzomys, 3 Oryzomys, 2 A. jelskii, 2 Phyllotis phaeus, 1 A. boliviensis, 1 P. pictus, 1 Nestor. Picked up all traps. Returned to trailer to skin mice. 1/2 cumulus clouds by 10 a.m. Overcast rest of day & evening. Set 40± traps in thick grass & near rock & bushes near stream. Rain starting about 10 p.m.

October 24, 1951 Rain on into morning. Took up traps. Catch 1 P. phaeus, 1 baby P. pictus, 1 small Oryzomys, 1 frog. we took trailer to Huancarani, about 2 miles up the road, & left it. Then we drove down to Limbani & Aguasani & camped near the Inca Co. warehouse. Set 50± traps in ~~so~~ thick damp vegetation. Foggy overcast all afternoon. Above Limbani at 12000± ft. level saw 2 of the dark gray birds with white heads on rocks in rushing stream. Saw 5 T. l. etc in evening. Cleared after dark.

October 25, 1951

N.
Aguasani, 3 miles SSW Limbani, 9500'

Traps held 2 caecilestids (near stream in dark damp vegetation), 1 Oryzomys (near stream), & 7 Akodon boliviensis? (brush & damp ferns & leaves not near stream). Soon steamy clouds formed. Shot hummingbird & saw several of same

Journal

October 25, 1951

N. Peru
Aqualani, 3 mi. SSW Limboni, 7500', Depto. A.

kind. Wrens, robins, chinchals, common, & blue backed swallows (as at Ocanque). 11 of mice taken yesterday, put up P. phaeus (1314♀), discarded Oryzomys (♂, 210-118, 18gms., test. 4½), P. pictus (juv., 131-63, ¹⁹18gms.) Shot black flycatcher and a red breasted tanager(?); specimens. Traps took 5 more A. baluensis during day. Set 15 additional traps on wooded hillside stream. Rain after dark & on & off during night.

October 26, 1951. Traps held 2 A. baluensis, 1 small Oryzomys, 3 medium-sized Oryzomys, 2 caenolestes. Shot 2 black backed yellow breasted rufous crowned birds in dense damp woods. Steamy low clouds in morning. Saw 4 birds hummingbirds. Shot red breasted blue-backed tanager. Set 30± traps on damp forested slope near river near tunnel (8800 ft.). Overcast all day. Rain for 1 hr. at 7 p.m. Caught small robin in snap trap.

October 27, 1951. Close trap line held 1 Oryzomys, 1 caenolestes (both M.K. catalog). Further line held 1 large Oryzomys, 2 Oryzomys, 3 A. baluensis?. Shot 2 kinds yellow birds & a brown flycatcher (all specimens). Took up all traps & set 25± from stream to top of grassy slope. Rain on and off after 10 a.m., hard in late afternoon, ceasing at dark.

October 28, 1951. Clear night & sunny morning, clouding up 9-10 a.m. Traps held 1 medium sized Oryzomys (M.K. catalog), 2 small Oryzomys (1 M.K., other discarded), 2 A. baluensis (discarded). Took up all but 5 traps (near Cavia? sign). Set 10 in wet woods near stream. With Mary set 35 near grass & brush & some rocks from 10000-10600 ft. on road to Limboni, below Camachani tunnel. Rain about 4 p.m.

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October 28, 1951

Agualani, 3 mi. N. Limbani, Depto. Puno, Peru

Saw 1 condor in morning. Hard rain for 1 hr. + after dark.

October 29, 1951. Local traps held 3 medium-sized Oryzomys.We packed up & drove to upper traps. Catch: M.K. 3 Oryzomys (small, white belly), 3 A. boliviensis; C.K., 3 A. bolivi., 2 Oryzomys.About 1/2 mile below Limbani ground more grazed & rocky, as at 11500', & perhaps would have some of higher alt. fauna (Neotoma, A. jelskii, P. pectoratus). Overcast at noon. Packed up trailer at Huancani and drove to Lake Aricoma. Rain, & snow above 15000'. No snow at lake until sunset, then cleared. Set no traps.

October 30, 1951.

Lake Aricoma, 15000', to Port Arthur, 13000'

Clear morning but soon clouding to 5/10. Departed 11 a.m. and drove to Crucero, thence to Port Arthur, a finca near Rosario, & camped by river. Saw 30+ Nettion on one pond, 30+ black-crowned night herons, yellow-legs, 1 wilson? snipe, glossy ibises. A small kind of eel on tule ponds by Port Arthur finca house. River slow here & few trout. Saw Phryganea ~~sp.~~ ^{phryg.}, Zonotrichia, Coccyzus, common at Port Arthur (formerly owned by japs). Set 30 traps in grass, along rock wall, & on rocky-grassy hill (dry).

October 31, 1951

Traps held 3 A. boliviensis (grass, dry, on flat near river; no rocks), 2 A. jelskii (rock wall), & 2 P. pectoratus (thick fine grass near rocks at top rocky bluff). Put up one of each.

Drove to about 5 miles beyond Arells & camped by side road. Set 30 traps among rocks, brush, & grass (little) on slope. Saw 2 aplomado falcons, Agelaius, a yellow-bellied black-faced grey-capped sparrow with grey tail with

Journal

October 31, 1951 To nr. Asillo, 13000', Dpto. Puno, Peru.
 Overcast + occasional light rain in afternoon.
 white medial warbler (grass, common), chuncos, flickers, etc.

November 1, 1951 To nr. Pucará (est.), 12700'
 Traps held 1 ? (small Phyllotis-like), ⁴ P. darwini ^{and} P. osilae,
 4 A. boliviensis, 1 A. jelskii. Rain on & off all night and at
 daybreak. Shot sparrow hawk &plomado falcon. Drove to
 Tropicana for mail, then to 2 mi. NNW station Pucará. Set 30
 traps on flat ground in grass or packed ground. Put up
 specimens. Overcast but no rain. Saw tinamou between Tropicana
 & camp, in grassy ditch alongside road, & flushed one near camp.
 November 2, 1951. To nr. Juliaca, Dpto. Puno

Traps held 6 A. boliviensis, 2 Hesperomys, latter near
 small holes burrows in packed earth. Clear overhead with
 clouds near horizon. Put up specimens. Drove to about
 15 miles from Juliaca & camped on puna. Heavy rain,
 wind, lightning after dark.

November 3, 1951 Nr. Juliaca, Dpto. Puno
 Drove to 2 1/2 miles from Juliaca & camped. Went to town
 to shop & mail letters. Warm day, cloudy at times.

November 4, 1951. Sunday To Puno, Dpto. Puno
 Two boys at Juliaca told me there were snakes, about 2'
 long and color "plano", on rocky dry hill at edge of town.
 Visited at Clínica Americana. Drove to Puno and camped on
 hill above town. Set 30± traps near rocks, rock walls, &
 bunch grass. Hard rain, thunder, lightning at night. We were
 told that usually no rain before Christmas here.

November 5, 1951. To nr. Vilque, Dpto. Puno
 Traps held 1 P. darwini, 2 P. osilae, 2 A. jelskii, 1 A. boliviensis.
 Shopped. Visited Inspección de Extranjería & found my

Journal

November 5, 1951 To nr. Vilque, Dpto. Puno, Peru.
 submitted for residence had been refused. Got copy + decided
 to take same to Arequipa + try again. About 3 p.m. departed
 with trailer + drove to beyond Vilque. My old letter from
 prefect (a new one now) got me thru control without showing
 passports. Much land now plowed in Vilque area. No traps.

November 6, 1951 To 13 mi. E. Tincopalca, 13700'
 Saw 2 perdices on road shortly after starting for higher
 country, + shot 2 there. At km. 58, 13600', stopped +
 hunted on grassy slopes for an hour; saw 1 tinamou
 but got no shots. Drove on to km. 91 + camped
 near a 1 mile long lake with 30+ east islands + many
 coots. Teal + geese present too. A previous lake at km.
 80 also had breeding coots, + ducks. Near camp verisoch
 or in rocks of road banks. Rocks + rough fine-grained
 sandstone as 5 miles S. Areillo. Much tola 2-3' high,
 post flowering, leaves appressed + small - cypress-
 like. Set 305 traps in tola + ⁱⁿ ~~among~~ rock-grass. Light
 rain in early afternoon, little at night. 15000'

November 7, 1951 To Huaylara, 52 mi. NE NE-E Arequipa,
 Traps held 2 P. pictus X, 2 A. jelskii, 2 P. darwini. Half
 overcast in morning but pleasantly calm + warm. Saw
Upucurthis among rocks + tola. Drove on toward Are-
 quipa. Tola of same kind continued about 5 miles beyond
 Tincopalca, then grass + rocks. Summit at 142½ km.
 mark from Arequipa. Camped near pools in stream (nearly
 dry) near km. 138. Saw ~~seed~~ Thrinacosoma, Colaptes, verisochas.
 Overcast + windy (from NE) but not cold during day.
 Visited lake to S. of road near km. 134. Lake 3+ miles

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November 7, 1951 Dpto. Arequipa, Peru.
Huaylarco, 52 mi. ENE Arequipa, 15000,
 long, shallow with almost solid growth water plants
 in parts, with many ducks, coots, gulls, &
 a few geese and flamingos. No outlet. Vicuñas com-
 mon between km. 134 & 144.

November 8, 1951 Moved trailer to near stream near km 136
 marker. Yareta covered rocks on slopes to S. of stream. Stream
 dry from here to the lake about 2 miles below. Set 3 traps
 near 2" drain. Increase in sand near grass clumps, & 6
 near yareta & rocks. Windy from E. & overcast. Spent after-
 noon censusing vicuñas km. 132-143. Light rain late afternoon.

November 9, 1951 Lost steel trap to fox; snap traps held 1
A. jelskii. Light snow on ground & overcast. Wet snow falling
 & strong E. wind 8 a.m. Watched vicuñas near km. 138
 mark from 11 to 4. Saw territorial squabbles, re-
 action to fox, orientation to wind in snowstorm. Over-
 cast all day with occasional rain or snow. Wet snow
 falling 5 p.m. Strong E. wind all day.

November 10, 1951. Traps held one imm. ♀ Phyllotis
darwini. Increased trap line to about 30 traps,
 mostly among rocks near yareta & tola. About 1" snow
 on ground at dawn but soon melted. Half
 overcast at 6 a.m.; 9/10 by 10 a.m. Saw caracaras,
Thrioceros, Geococcyx, Phrygilus plebejus, Colaptes,
Nettion (flock at pond 100' from trailer), gulls (heads
 black), vireos, fox tracks. Rain & hail
 at 10:30 a.m. Watched vicuñas 2 to 5 p.m. Snow in eve-
 ning. Saw a few spine tails near rocks & grass.

Journal

Arequipa, 15000', Peru

November 11, 1951

Huaylarco, 52 mi. ENE Arequipa, Depto. A

Snow about 1 1/2" deep at dawn. Overcast. At snow 3/4 gone by 9 a.m. The 30 traps held 5 A. jelskii, 3 P. darwini. I returned to examine mice & fusch & flycatcher shot. Mary departed 9 a.m. to watch vicuñas; returned noon. I set 20 traps on vegetationless hillside among boulders, & among spring grass on sandy flat. Hail, rain, in afternoon. No precip. after dark. Shot 3 teal (Nettion) at camp pond.

November 12, 1951. New trap line held 0; old line, 1 Chusquea & (m. K. catalog). Took up 10 old traps & reset among boulders & yareta. Shot a T. macrurus (2 others near it). Also - cumulus 9/10 in morning, changing to 7/10 cumulus by 10 a.m. I watched vicuñas m. km. 138 from 10 a.m. - 5:30 p.m. Hail for 1/2 hr. at midday.

November 13, 1951 Traps held 2 P. darwini. No rain last night. Fog until about 7:30 a.m., then sunny until 8:30 when clouds from E. covered 8/10 sky. Of the Nettion ^[= Anas flavirostris] shot yesterday: ♀, lgt. ovum 6 mm.; ♂, test. 16; ♂, testis 34 mm. long. Drove to El Saliterio (7 1/2 to Inata junction, 10 more to El S.), bought gas, then to Inata (19 mi. from junction). No postoffice & no 2 poor stores at Inata. Saw sev'l vicuñas 5-10 miles from Inata. Shot a goose near Inata, fox near Paty. Thunder, lightning. Evidence of rain in camp area.

November 14, 1951. No rain at night. 7/10 cumulus in morning; warm & nearly calm. Traps held 1 P. darwini. Took up all traps. Set 30 ± traps near boulders, yareta, tala on N. facing slope at foot of lake, about 1 mile S. of camp, & 8 in sand among bunches stiff grass. Shot one (of 4) flamingo on the lake. Saw 2 avocets (still?), grey & white black-headed grebe, 100 ± rooks,

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PERÚ

November ¹⁴~~15~~, 1951 Huaylarco, 15000', Dpto. Arequipa,
 100± Anas, 100± Nettion, 20± Larus. Lessonia along shores,
 & 10± sandpipers. Warm ~~all day~~ but 5/10 cloudy early p.m. Mostly
 full moon. Strong winds in late afternoon.

November 15, 1951. Traps in rocks held 3 P. darwini (put up
 1), 1 A. gilshii (discarded). Traps in grass held 0. 2/10 cirrus
 clouds; sunny & warm. Many watched vicuñas midday,
 I in late afternoon. Set 10 ^{additional} ~~additional~~ traps in rocks near others.
 No rain all day; cloudy & windy in late afternoon.

November 16, 1951. Cirrus clouds in early morning; 8/10 cumulus
 by 10 a.m. Traps held 0 - took up all traps. Saw several
 night herons at lake. Two gulls sitting on old coat nest? ^(?)
 Some coats with young, swimming. Saw 2 condors near lake.
 Watched vicuñas 11 a.m. to 5 p.m. No rain.

November 17, 1951. Watched vicuñas 6-10 a.m., with interrup-
 tions. Shot 1 + saw 10± vicuñas among boulders of road bank
 nr. km. 142; ^(from Puno) Prepared to leave for Arequipa tomorrow. ^{Bright warm day, few clouds.}

November 18, 1951 To Arequipa, Perú.

Left camp about 8:30 a.m. & drove to Arequipa.
 at Laguna Salinas ~~was~~ ^{wide} salt flats & no flamingoes
 visible. Polylepis bushes along road about km.
 45. ~~Hotel~~ Stayed at hotel. Visited Mr. & Mrs. Arthur
 Williams, 318 Moral. Wms. recommended Heda. Ilpa, John
 Reine, hatch sheepman, as place to find out about repod-
 uction in stock (on left, Puno to Juliaca, half way). Many
 perdizes 15-20 km. from Puno road toward S.A. de
 Esquilache on hill Puellaquello. On road to Chapí-
 mine from Arequipa (Sr. Chabancix (-sp.?), Arequipa

Journal

November 18, 1951

Arequipa, Peru.

(phone)

2315, huancas + wild orce, said wellcome.

November 19, 1951. Shopping & passport business in town.

November 20, 1951. Shopping & passport business. At 6 p.m. departed
To Huaylarco, 15000', Dpto. Arequipa

ed for Huaylarco, 90 miles from Arequipa, & arrived midnight. Mary had caught 2 live chinchillulas during my absence. It had rained today, otherwise not since my departure.

November 21, 1951. Rested & loafed. Snow & hail in afternoon. Wind.

November 22, 1951 at 7 a.m., $\frac{2}{10}$ series. Water frozen. Watched vicuñas 8-10 a.m., 3:30-5:30 p.m. Strong west wind most of day & not over $\frac{3}{10}$ cumulus. Set 40 snap traps among boulders, rock walls, grass clumps, on dry slopes. Shot large hawk atop telephone pole.November 23, 1951. $\frac{1}{10}$ series at 7 a.m. Ice on water. Traps held 2 A. jelskii. Watched vicuñas 8 a.m. - 4 p.m. Strong W. wind in afternoon. Sunset about 6 p.m.

November 24, 1951 Traps held 0. Saw a fox near camp 7 a.m.

Watched vicuñas to W. of camp 9:20 a.m. - 11:30 a.m. Clear & dry with W. wind. Fairly hard freeze last night. Watched vicuñas nr. km. 130 4-5:30 p.m. Saw 2 avocets, at lake nr.

km. 134. Some gulls sitting on east islands as if incubating (heads black). No flamingos or geese seen at lake. Shot a Muscivora, only kind common here. Saw flock 6+ Deica (not speculifera) [Phrygilus?]November 25, 1951. Traps held 1 A. jelskii (discarded).Took up all traps. Thermometer -18°C. (-2°F.) last night but surface frosted so perhaps not truly reading. Strong ice on pond. Perhaps our coldest night here this month I judge. $\frac{1}{10}$ series clouds. Volcan. Ubinas

Journal

November 25, 1951

Huaylarco, 15000' Dpto. Arequipa, PERU

smoking slightly. $+2^{\circ}\text{C}$. at 8:10 a.m. Shot a flicker near camp. Watched vicuñas 3-5 p.m. Clear night. Wind died at sunset.

November 26, 1951 Min. temp. -14°C (in box under trailer). 8/10 thin

series at 8 a.m. Sunrise 5:30 a.m. Watched vicuñas 8 a.m. - 4:30 p.m.

from near km. 134 & 133. Saw territorial behavior, young with ~~♂♂~~ ^{nursing}, pawing soil for food, strong W. wind in afternoon. A flamingo at the 133 1/2 lake. ^{lake Penane}
Max. temp. $+12^{\circ}\text{C}$.

November 27, 1951. Min. temp. -15°C . (box under trailer). Clear; 3/10

cumulus 3 p.m., then decreasing clouds & strong W. wind. Black & white hooded ducks & 1 flamingo on lake S. of 133 1/2. Thin smoke from Ubenas.

Tried to catch viscacha nr. km. 141 1/2 (from Puno) 9-3 p.m. No catch; saw 12[±] individuals, shot early pregnant ♀. Saw lizards - seen nearly every day & occasionally taken in snap traps. Watched vicuña nr. km. 134 from 3:30 - 6:20 p.m. Wind stopped several min. after 5:45 sunset.

November 28, 1951. Max. temp. yesterday $+13^{\circ}\text{C}$; min. -12°C . Clear

morning. at 7 a.m. we were at km. 141 1/2 from Puno where saw 20[±] viscachas. Trap sprung & Sorex bait eaten to stalk, ~~and did not~~ ^{and did not} catch.

Saw several A. jelskii in sunlight among rocks. 7/10 cumulus by 2 p.m. & little steady wind. Watched vicuñas 12:30 - 4:30 p.m.
Max. temp. $+13 1/2^{\circ}\text{C}$.

Saw juvs. play-fighting. Same juv. ♂ still in ♂-♀ bands.

November 29, 1951. Min. temp. -6°C . Clear at 7 a.m., 7/10 cumulus by noon. Later all overcast - no rain - clearing in late afternoon. E. wind.

Watched vicuñas 11:30 - 4:30. Change in numbers in bands near km.

138. Spotted a young ♂ in ♂-♀ band of 11. Max. temp. $+17^{\circ}\text{C}$. Mary caught 3 A. jelskii in traps set by boulders nr. km 142 1/2 (from Puno).

November 30, 1951. Min. temp. -8°C . (under trailer). at 8 a.m., fair

E. wind, 5/10 thin series. Watched vicuñas 7:45 a.m. - 1 p.m., 4-6 p.m. Max. temp. $+13 1/2^{\circ}\text{C}$. Rel. hum. 20% at 2 p.m.

Journal

December 1, 1951

Huaylarco, 15000; Dpto. Arequipa

Min. temp. -8°C . Watched vicuñas 4:20-8:30 a.m. Curious clouds in a.m., 8/10 cumulus & E. wind by noon. Hail in early afternoon. Watched vicuñas 4-5:15 p.m. Max. temp. $+12^{\circ}\text{C}$.

December 2, 1951. Sunday. ^{min. temp. $-5\frac{1}{2}^{\circ}\text{C}$.} Drove to El Solitario & back. Shot a *vesicaria* with no emb. but moderate mammary tissue. Set ⁴⁰ 35 traps among boulders & yareta on slope $\frac{1}{2}$ mile W. of camp. Wrote letters. Hail in early afternoon but clearing in late afternoon. Max. temp. $+14^{\circ}\text{C}$.

December 3, 1951. Monday. Min. temp. $-5\frac{1}{2}^{\circ}\text{C}$. Traps held 4 *P. darwini*, 2 *A. jelskii*. 4 p.cum. by 9 a.m. Watched vicuñas 9:30-10 a.m. Worked at mapping km. 138-139 area. Rain & hail about 1 p.m. & all overcast. Mapped 3-5 p.m., putting rock markers each $\frac{1}{10}$ km., kms. 138 to 139 $\frac{2}{10}$. Max. temp. $+14^{\circ}\text{C}$.

December 4, 1951. ^{min. temp. -5°C .} Traps held 4 *A. P. darwini* (examined by Mary). Watched vicuñas 10 a.m. - 4 p.m. Put road markers km. 136-138, every $\frac{1}{10}$ km. Clouding up in morning, hail on & off for an hour in early p.m., clearing after 4 p.m. ^{Temp. max. $+12\frac{1}{2}^{\circ}\text{C}$.}

December 5, 1951. Min. temp. -3°C . Traps held 2 *P. darwini*. Took up all traps. Clouding up in morning, 8/10 cumulus, 30% rel. humidity, at noon. W. wind & no precip. in afternoon. Watched vicuñas & mapped 12:30 - 4 p.m. Max. temp. $+13\frac{1}{2}^{\circ}\text{C}$.

December 6, 1951. Min. temp. last night $+1\frac{1}{2}^{\circ}\text{C}$. 9/10 stratus overcast & calm 7 a.m. Watched vicuñas 7:30-12:30. Shot 2 teal & a *Quina*. Hail about 2 p.m. Max. temp. $+10^{\circ}\text{C}$.

December 7, 1951. Min. temp. -1°C . Alto stratus overcast 6 a.m. Watched vicuñas 7 a.m. - 12 m. Clouded up; wet snow & hail 1 to

Journal

December 7, 1951

Huaylarco, 15000', Dpto. Arequipa

3 p.m. & remained overcast. Max. temp. $+10\frac{1}{2}^{\circ}\text{C}$.

December 8, 1951. Min. temp. -5°C . Clear at 7 a.m. $\frac{3}{10}$ cumulus by 11 a.m. Shot Anas on lake & saw pair of avocets there at usual place. Watched vicuñas 7-10 a.m. Drove to km. 121, shot 2 viscachas, set 40 traps on mod. slope among boulders, tala, yareta, psynophyllum. ^{No precipitation today.} Max. temp. $+14^{\circ}\text{C}$.

December 9, 1951. Min. temp. $-5\frac{1}{2}^{\circ}\text{C}$. Drove to km. 121 & picked up traps. Catch 2 A. jelskii, 3 P. darwini. Bat gas at El Solitario. Returned to camp. Dry - 20% humidity 11 a.m., & $\frac{4}{10}$ ci. str. & cu. clouds. Little wind. $10\pm$ flamingoes at road end of lake. Max. temp. $+14^{\circ}\text{C}$. No rain or precip.

December 10, 1951. Min. temp. -4°C . Clear at 7 a.m. but all overcast in afternoon & rain & snow in late afternoon. Watched vicuñas & mapped in morning. Loud continuous calling ^(Tinamotis) ca-co-ca-co (la-sol, la-sol) heard in early morning on grassy hill near camp (as heard one morning near Cocachara). Max. temp. $+13\frac{1}{2}^{\circ}\text{C}$.

December 11, 1951. Min. temp. 0°C . 2" wet snow on ground & all overcast in early morning. Caught ~~young~~ 7 foxes in trap. Watched vicuñas 9 a.m. - 2 p.m. Snow in late afternoon. Max. temp. $+10^{\circ}\text{C}$. To nr. Imata, Dpto. Arequipa

December 12, 1951. Min. temp. -1°C . 1" snow on ground but quickly melting. Packed & moved to near Imata & set 50 traps among rocks, yareta, Senecio, psynophyllum. Warm at midday; brief shower in afternoon. Altimeter read 14650'. Vicuñas & viscachas seen, & small herd llamas.

4

12

Journal

December 13, 1951

6 miles SSE Imata, 14500±, Dpto. Ariz.

Traps held: A. jelskii, 2 P. damianii, 1 toad. Many large tadpoles, some with 4 legs, in running stream, + fish to 2" long too. Birds: Conelades common, large chestnut-backed white-bellied hawk, Agriornis (1), Upu-
certhia (1), Sialia (100), Conelades (50), Muscias-
icola (cincerea?) (30), ^{colaptes (2)}, Therocorvus (2), Attagis (2), Phrygilus, Phalio-
barnes (2 gray downy young in nest seen before, adult perched 100 yds. away), hummingbird with 7/8 built nest on rock side (much white in tail, green back, brown below, no eggs yet). Alto-sunulus at 7 a.m. descending to cumulo-stratus 9:30, + calm. Took up all but 5 traps + reset. The big plumer and a few bands vicuñas, llamas, + alpacas seen between camp + Imata (very poor store there). Rain + hail in mid afternoon + overcast into evening. The tola here has narrow granular leaf + yellow flower (mostly in seed).

December 14, 1951. Traps held: P. sublimis + 1 A. jelskii. Reset 1/2 traps. Overcast all day + wet snow in afternoon, 1/2" snow on ground at sunset.

December 15, 1951. No catch. Took up all traps. Sunny + 7/10 alto-sunulus at 7 a.m. Drove to Paty, Soltero, + about 2 miles toward Progreso (Salinas) off main road from near km. 62±. Foggy at W. side Laguna Salinas + wet snow. 14200' at camp, 7 miles from borax works. A few puddles only water in the lake. Much salt gathering activity by Indians. No flamingoes. Occasion-

Journal

December 15, 1951.

Salinas, 14200', Dpto. Arequipa.

at some ^{grass} ~~grass~~ along shore. Set 40 traps on rocky hills.

December 16, 1951. Clear cold night; ice inside trailer. Traps held 1 P. darwini juv., 2 A. jelskii (M.K. specimens). Drove to brax co.; - dilapidated large sheet iron buildings with Indian caretakers. Then drove 11 miles beyond on fair dirt road to side lake toward Ubinas (road goes on toward Ubinas). A flat green short grass strip up to 1 mile wide along lakeshore, & many llamas & alpacas here. Scattered mud & rock Indian houses. Occasional groups vicuñas. Saw Nettion on canal, Cuculiza, Leucotis, gray Phrygilus, ^{Thrinornis}, Lissonia (lakeshore). An Indian told me that collectors were here some years ago, lodged at brax co., & took skunk, foxes, mice. He said no venado here, no herons or weards. Clear in morning, clouds starting about noon over Picheu-Picheu. Behind green around lake is flat or gentle slope of sandy ground with clumps spring ichu. Toward Ubinas from brax co. some areas of 1' high tala. No snow on visible mts. Heard mews Misti, Chachani, Ubinas from points on lake shore. Some side roads going somewhat higher from this area. Reset all traps (50).

December 17, 1951. Cold night & clear morning. Traps

held 2 P. darwini (♂ 1380 & 1 juv.). Rare mouse tracks on sand among spring ichu. Took up 20+ traps & reset among tall grass, rocks, sand, 1/4 mile W. camp on slope. Drove up a road toward Picheu-Picheu & hired one haen uphill to about upper limit vegetation. Many vicuñas there among large boulders. Good for future trapping. Saw tracks

Journal

December 17, 1951

Salinas, 22 mi. E. Arequipa, 14200'apparently of Attagis in a sandy draw (straight line, 3 trees).Occasional mouse tracks (Hesperomys?) on sandy slopes where a few rocks & stiff reeds. A few clouds in late afternoon.December 18, 1951. Clear, cold. Traps held 2 P. darwini,
TO AREQUIPA, PERU1 a large ♂, & 1 Akodon andinum. Put up 1 each. Drove to Arequipa. Set 10-12 traps at km. 51 (13700'), km. 45 1/2 (12700'), km. 38 1/4 (11600'), and km. 31 1/2 (10750').Stayed at Hotel Don Cordero at 12000'. Arequipa

December 19, 1951. Shopping & business.

December 20, 1951. S & L. O. Persons in bus arrived

December 21, 1951 Departed Arequipa about 6 a.m. & camped about km. 28. Dry & not cold at night.

December 22, 1951. To La. Salinas, Dpto. Arequipa

Picked up traps left Dec. 18. At 10500' catch 2 Phyllotis darwini + remain 3 others + several pulled out traps.

Dry shallow canyon, brush with some rocks, purple-bell flowered thorny bush, some rocks, no water.

At 11300', 5 A. jelskii, 2 Phyllotis d., 1 bird (+ shot a Upucathia), in 12 traps. Boulders, several kinds bushes including thorned one 7' high (with balls of thorns 1' diam., apparent old nests of birds), large 4" leaved pale tomentose bush. No open water but rather shaded & not very dry. At 12300', 1 Akodon andinum, & P. darwini, in 12 traps. A scrub-oak like 4' high bush, Polylexis to 3', boulders, sandy - all mice near boulders. At 13500' in 10 traps, 2 P. darwini + 1 bird (same as at 11300') Polylexis to 5' high; some grass, boulders, steep slope.

Journal

December 22, 1951 To Lq. Salinas, 14200', Dpto. Arequipa
 Vicería sign down to 11600 locality. Many had set 15+ traps
 near hedge near hotel (Selva Alegre) Arequipa, & these took
 3 A. boliviensis (taken Dec. 21). Pearson took several P.
derivinsii in wash 20+ km. out of Arequipa, today. At
 Salinas climbed to about 15000' & set ~~set~~ 40+ traps at
 edge slide of large boulders where yareta, tula, viscacha.

December 23, 1951. Min. temp. +1°C. (overcast & drizzly
 at night), & 7/10 overcast 6 a.m. A. Pearson took 3 Hesperomys,
 2 A. auduboni, on ichu sandy flat near camp. O.P. & I, each
 with 50+ traps at 15000', took 1 A. auduboni each. Put up
 1 auduboni. Snow during day. Departed 3:30 and drove to
 about km. 99 and camped with trailers. Saw Tamias at
 roadside at km. 89.

December 24, 1951. Snow at night. Drove on to Huayllanes, arriv-
 ing about noon, & joined Pearson's there. O.P. photoed some viscacha
 action in afternoon. Snow in evening.

December 25, 1951. Snow on ground in morning 3" deep. O.P. saw
 3 tamias (Tamias) on ridge just ^{NW} of road nr. km. 136.
 We later heard them near 1/2 mi. NW km. 141. O.P. took a P. bol-
iviensis in latter vicinity. Saw groups 2 & 3 teal along stream,
 now running and of 10x volume of ^{a few} ~~some~~ days ago. Evident-
 ly start of wet season. Saw 5 or 6 condors near caracara. A.
 Pearson set traps in grass & rocks near km. 136. No rain
 or snow during day; overcast evening & night.

December 26, 1951. Overcast morning. Took I drove with
 A. & O. Pearson to 6 mi. SSE Inata where towers
 of rock. Photographed caracara nest. Found

Journal

December 26, 1951

Huaylarco, 15000', Dpto. Arequipa

bird nests, old, in cavities in rocks where cavity reached 1' or more above opening. Returned to Huaylarco. Some gulls & coots still on nests in Lake Peñón. Coot with walking downy young seen. I shot 2 flamingoes at lake.

December 27, 1951. Hunted tinamou but saw none.

Hunted Red Nettie & Anas on lake Peñón. A. Pearson shot an avocet, one of 2, on lake. Saw 5 condors. Snow in afternoon.

December 28, 1951. Pearson & Mary hunted Tinamotis sounds but saw none. Nearly clear until 9 a.m. I took pictures flamingos, vicuña bands in snow. Pearson & Mary saw Attoya ^(+d). O.P. photoed nest of gull atop rock near edge of a 200 yd. long lake. Downy chick & ripped egg in nest (both gray with dark marks). Two adults flew to 15' overhead diving at us. Nettie & Anas & flamingos on ^{same} lake. I shot a ♂ fox seen near vicuña band. Pearson's departed in afternoon. Snow in late afternoon. Saw 14 condors.

December 29, 1951. 3" dry snow on ground 6 a.m., melting rapidly. Prepared specimens. Visited green mud & rocks 1/2 mile NW km. 142; many viscachas, mouse tracks in snow (divinal). Looked for new campsite. Stream highest yet in afternoon. Rain & snow in late afternoon.

December 30, 1951. Snowing lightly in morning & 3" snow on ground. Snow stopped about 9 a.m. & all melt.

Journal

December 30, 1951.

Huaylarco, 15000', Dpto. Arequipa

ed up to km. 138 (but still on ground higher) by 12 M.
 Moved camp to km. 137. River wide & brown; high-
 est yet. Hail & rain about 3 p.m. Got car stuck in
 ford near km. 139 but got out. Snow in evening.

December 31, 1951. Only about 1" snow & melted rapidly. Clean-
 ed gas system of car of mud & water. Mary set 50 traps near
 km. 142 in rocks. Rain & hail during afternoon, on & off, &
 snowfall about 4 p.m. for 1 hr.

January 1, 1952 at 6 a.m., $\frac{1}{4}$ ground snow covered, overcast.
 We drove to near Mary's 45 traps (nr. km. 142). Caught
 1 P. boliviensis (M.K. cat.). She set more traps - 70 total.
 I shot 2 baby & 1 adult viscacha in rocks. Return-
 ed to camp (km. 137). Snowing but stopped about 11 a.m.
 Watched vicuñas 11:30 - 4:15 p.m. when hail & snow became
 constant. Overcast all day. This morning shot 2 baby
 viscachas, 395 & 415 gms., & pregnant ♀ (emb. R H, 30 m.).

January 2, 1952 Little snow on ground & $\frac{1}{2}$ overcast at
 6 a.m. Went to Mary's trapline. Traps held 4 P. boliviensis,
 1 P. darwini (this in 10 traps set where little Suncus
 but much yareta), ^{M. took up all 70 traps.} shot 57 viscacha with large
 testes & imm. Tinamotis. Saw at least 7, per-
 haps 8-10 different Tinamotis. Wounded imm. con-
 dor at carcass nr. km. 138 but it escaped me on
 foot. $\frac{9}{10}$ overcast & fair wind by 1 p.m. Mary shot
 a hummer with mass in bill (nesting mat'l prob-
 ably) and caught a spine tail in snap trap. I
 flushed ^{a pair of} Attagis from ishu on hill. Clouded up about

Journal
Vicuña

January 2, 1952

Huaylara, 15000'; Dpto. Arequipa

1 p.m. as if to storm but storm moved on to W. leaving sky nearly clear at 5 p.m. Watched vicuñas near km. 139 from 5:50 to dark (6:30). No precipitation during day for first time in 10(?) days.

January 3, 1952. Drove to near km. 142 (1/2 mile by 335°T from km. past) and hunted tinamous 8-11 a.m.; saw 3. Returned to camp. No snow on ground today; 0/10 cumulo-nimbus. Visited gull nest photoed recently; now deserted. Shot 2 duas on lake where 30± in flock. Watched vicuñas nr. km. 133 from 3:30-6:30 p.m. Sunset about 6:05 (my time). Only precip. 1/2 hr. hail at midday.

January 4, 1952. Watched vicuñas 8-9:30 a.m. Hunted tinamous 9:30-12 + got one at 15400'. Cumulus clouds 3/10 + much sunshine today. Put up tinamou (♀ 1395). Hunted nr. km. 136 - no luck. Clear night.

January 5, 1952. Frost heavy. Hunted tinamous nr. km. 142 6:20-9:30 a.m. Killed none; saw 4. Watched vicuñas 12-3:30 4:30-5:30. East wind + 2-6/10 cumulus clouds. Dry + no precip. ^{Clear night.}

Max. & min. temps. today & yesterday, +11°C. -2°C.
To nr. km. 100 from Arequipa, 13800'.
January 6, 1952 Departed 8 a.m. for km. 99-100 from Arequipa to look for tinamou. Hunted around 99 + 99 about 3 hrs. without luck. Killed one Rathoprostus near km. 100 (specimen). Heard Tinamotis nr. km. 100-102. Saw Agrocinis in rocks. Spine tails + streaked back-gray breasted Phrygilus (?) common, + Upucerthia seen. Hail for 1/2 hr. about 2 p.m. Camped near km. 99. Heard Tinocornis in night.
January 7, 1952. No precip. or frost at night. Hunted 5 a.m. to 11:30 a.m., on & off, nr. km. 99-101, ^{but} saw no tinamous.

Journal

January 7, 1952

Huaylara, 15000', Dpto. Arequipa, Perú

Drove back to camp at km. ¹³⁷147. Snow (1") in late afternoon. Wet-
ter lower than Jan. 6.

January 8, 1952. Max. & min. temps. Jan. 6 to this a.m., -1° , $+11^{\circ}\text{C}$. $^{9}/_{10}$ cirro-stratus & cumulus 8 a.m. A Ducula taken in snap trap yesterday by M.K. had testes 4 mm. Jan. 5 I saw Leio-
sitta entering burrow ^{again} ~~again~~ & again - nest building or feeding young? About 1" snow in late evening.

January 9, 1952. Hunted Tinamotis nr. 142 8-10:30 a.m. & killed a ♂. Watched vicuñas in afternoon. Overcast all day. Hard hail about 11 a.m. About 10 flamingos at road end of Lago Peñón. Min. temp. last night $+1/2^{\circ}\text{C}$, max. yesterday $+13^{\circ}\text{C}$. Rain in evening.

January 10, 1952. Snow at night & on until 7 a.m., melting quickly. Temps. 0°C , $+10^{\circ}\text{C}$. Watched vicuñas 8-12. Hunted sandstone rodent 1 mile NW km. 140 but decided poor for trapping. Shot
(♀, 19st. ov. $1 1/2$ mm.)
a Felis, & saw 2 others. Overcast afternoon with hail about 3 pm.

January 11, 1952. Temps. $+1^{\circ}$, $+11^{\circ}\text{C}$. Overcast. Watched vicuñas 8-12 M. Km. 139.2, Leucitta pair (one red brown on ^{folded} wings, other not) entering & "drain" hole in 8" high vertical dirt bank near stream. About 18 flamingos at road end of Lago Peñón. Near this lake on small clear stream saw a pair of teal. One ran upright, other, followed by 5 running downy chicks, ran with head low at level of shoulders. Shot a goose, one of 5, nr. Lago Peñón.

January 12, 1952. Temps. $+1^{\circ}$, $+11^{\circ}\text{C}$. Cirro stratus clouds 7 a.m., then cumulus, & rain 10 a.m., hail 3:45, snow to 4:15, & snow after dark. Hunted Tinamotis 8-12; no luck. Watched vicuñas 1-4 p.m.

January 13, 1952. Little snow left in morning. Temps. $+1^{\circ}$, $+10 1/2^{\circ}\text{C}$.

Journal

January 13, 1952

To nr. Vilque, Dpto. Puno, Perú

Departed 8:30 & drove toward Puno. Saw skunk remains 14100' before reaching Tinicapalca (13600'). Hunted in ichu $\frac{1}{2}$ hr. at km. 112, 14400', but saw no tinamous. Lake at km. 92 from Puno had 100+ flamingoes, teal, coots & gulls on grass islets, & pair geese with 4 swimming downy young. At a lake nr. km. 81, some gulls still sitting tight on grass islets, two gray downy young gulls on one islet & 2 adults beside, most coots half grown. On shore 3 gray downy birds with white on sides head & upper neck - grebes? Several brown swallows near shore km. 92 lake. Some apparent juv. gulls - partial black caps - at km. 81 lake. Continued on to cañon in area km. 55, grassy slopes & flats near stream, & hunted for tinamous. A local Indian showed me where he had seen perdez, in greenish rather open places on gentle slopes where thicker grass near, but found none. At dusk I drove from km. 51 to 60, slowly, & saw one *Nathoprocta* about km. 57. Camped by road. No traffic. Overcast, & much hail & hard rain at night. 13600' elev.

To Huaylarco, 15000', Dpto. Arequipa

January 14, 1952. Hunted 5 a.m. - 11 a.m. Saw 2 perdez, 1 codorniz, & shot 1 perdez. Shot a parakeet, one of flock 15±. Spine tails & *Certhia* common, yellow *Phrygilus* finches & small gray one, flickers, doves, a gray sparrow with white subterminal tail markings. At 11 a.m., overcast & occasionally sprinkling, started back toward Tinicapalca & Huaylarco. A probable *Tinamotis* ^{14100'} flew from near road at km. 62½. Overcast all day & arrived Huaylarco camp 7 p.m. Shot 2 teal, & 2 vesicacher, & 1 goose on the way. Rain & snow in evening. Thermometer (since Jan. 13 a.m.), 0°, + 9°C.

Journal

January 15, 1952

Huaylarco, 15000', Dpto. Arequipa

Much more water than before; small lake near camp, formerly dry, $\frac{1}{3}$ full. Temp. min. $+1^{\circ}\text{C}$. last night. 1" snow on ground + overcast at 6 a.m. Repaired gear & examined dead birds. Snow & rain $\frac{1}{2}$ hr. about 2:30 p.m. Watched vicuñas 4-5 p.m. Snow after dark.

January 16, 1952. Patches snow on ground in morning; stratus overcast.

Watched vicuñas 8-1 p.m. about 30 flamingos at road end Lgo. Penane.

Flock 22 ^{geese} ~~flamingos~~ on Pampa Penane (km. 133 $\frac{1}{2}$). Overcast all day. Heavy hail late afternoon.

January 17, 1952. Temps. since Jan. 15, 0° , $+4\frac{1}{2}^{\circ}\text{C}$. Overcast;

fog until 8 a.m. Went to tinamou hill NNW km. 142.

Snow 2" deep there. Saw 8 Tinamotis & killed 3. Returned to camp. Rain & hails from noon on, intermittent.

January 18, 1952. Temps. $+1^{\circ}\text{C}$, $+9^{\circ}\text{C}$. Overcast morning but no

snow on ground. Hunted tinamous near km. 143; saw 4, got 0.

M. set 4 live traps near km. ^{141 $\frac{1}{2}$} ~~144 $\frac{1}{2}$~~ from Puno. Yesterday she caught 9

P. boliviensis NW of km. 143 (from dry.), & kept in cage. I watched vicuñas 11 a.m. - 4 p.m. Rain & wet snow in evening.

January 19, 1952 Temps. $+1\frac{1}{2}^{\circ}$, $+9\frac{1}{2}^{\circ}\text{C}$. (under trailer).

Foggy & snowing lightly, 3" snow on ground, 6 a.m. Went to tinamou hill nr. km. 143 & shot 2 Tinamotis. Mary got 2 A. jelskii in live traps at km. 141 $\frac{1}{2}$ (from Puno) & kept in cage.

January 20, 1952. Started for Solitario but water in gas

delayed until 10:30. Went to km. 101 & hunted tinamous for

2 hrs. Rain ^{commenced} ~~commenced~~, hard. Returned to camp. Water level high, perhaps highest yet. Road to Arequipa impassable at spot.

January 21, 1952 Temps. (since Jan. 19) 0°C , $+9^{\circ}\text{C}$. Fog

until 8 a.m. No rain at night. Watched vicuñas 8-4. Lake

Journal

January 21, 1952

Huaylarig 15000; Dpto. Arequipa

Pénase about 200 yds. longer at road end than 1 month ago, central spot half submerged. About 20 flamingoes in groups at road end of lake. Hard hail in mid-afternoon; ^{precip.} ceasing about 4:30 p.m.

January 22, 1952. Temps. $+1^{\circ}$; $+10^{\circ}\text{C}$. At 7 a.m., $\frac{3}{10}$ cirrus, cumulus

forming below. Watched vicuñas & mapped 7-11 a.m. Usual hail & rain in afternoon, but rain only at night. ~~clouds from E. not overhead until 3 p.m., then light rain.~~

January 23, 1952. About $\frac{3}{10}$ cirrus at 6 a.m., not overcast

completely until 3 p.m. Much sunshine in morning & not cold. Watched vicuñas & mapped 7-11 a.m. Only 2 or 3 turtles all day; road difficult or impassable ^{to Arequipa}.

January 24, 1952. Temps. -1°C ; $+11^{\circ}\text{C}$. $\frac{1}{8}$ " ice on water ⁱⁿ tank. Alto-^{to} semi-

ulus overcast 7 a.m. Watched vicuñas & mapped 7-12. Overcast at 4 p.m. but no precipitation all day.

January 25, 1952. $\frac{1}{2}$ " snow on ground. Temps. $-\frac{1}{2}^{\circ}$; $+9^{\circ}\text{C}$. Hunted tinamous 7-8 a.m.; saw none. Watched vicuñas 8:30-12, 1-2:30.

Set 20 traps in ichu & rocky draw near camp. Rain, hail, & snow intermittent after 1 p.m.

January 26, 1952. Temps. $-3\frac{1}{2}^{\circ}$; $+10^{\circ}\text{C}$. 2" snow on ground. Hunt-

ed tinamous nr. km. 143 from 7-10 a.m. Killed 2 Tinamotis. Shot 2

Nettion on lake near camp. Many watched vicuñas 3-4:30 p.m.

No precipitation today. No catch in 20 traps.

January 27, 1952. Sunday. Frosty. Thin cirrus clouds. Nearly clear last night. Min. temp. -2°F . No catch in traps. Drove to Inata, 20 miles & return, looking at vicuñas. Car repairs.

January 28, 1952. Slight precip. last evening. Temps. 0°C min., $+11^{\circ}\text{C}$ max. All stratus overcast 6 a.m. Watched vicuñas 8-12, ^{2:30-4:30} A

Light ^{wet + rain} snow, 8 a.m. - 11 a.m. Rain & hail after 5 p.m. Some sunshine at midday. Found freshly dead juv. ♂ vicuña nr. km. 138.

Journal

January 29, 1952

Hwaylarca 15000', Depto. Arequipa, Peru

Rain, no snow, last night. Temps. $-1/2^{\circ}$, $+8^{\circ}\text{C}$. Spent morning extracting car from mud. Mary watched vicuña 10-11:30, I from 3-4 p.m. Sunny at times; all overcast and drizzly at 4 p.m.

January 30, 1952. Temps. 0° , $+9^{\circ}\text{C}$. No precipitation noticed during night. Watched vicuña groups, km. 133-134, from 9-11:30. Cumulo-stratus overcast by noon. Took up 20 traps; 5 big-ears only catch. Rain on & off after 3 p.m.

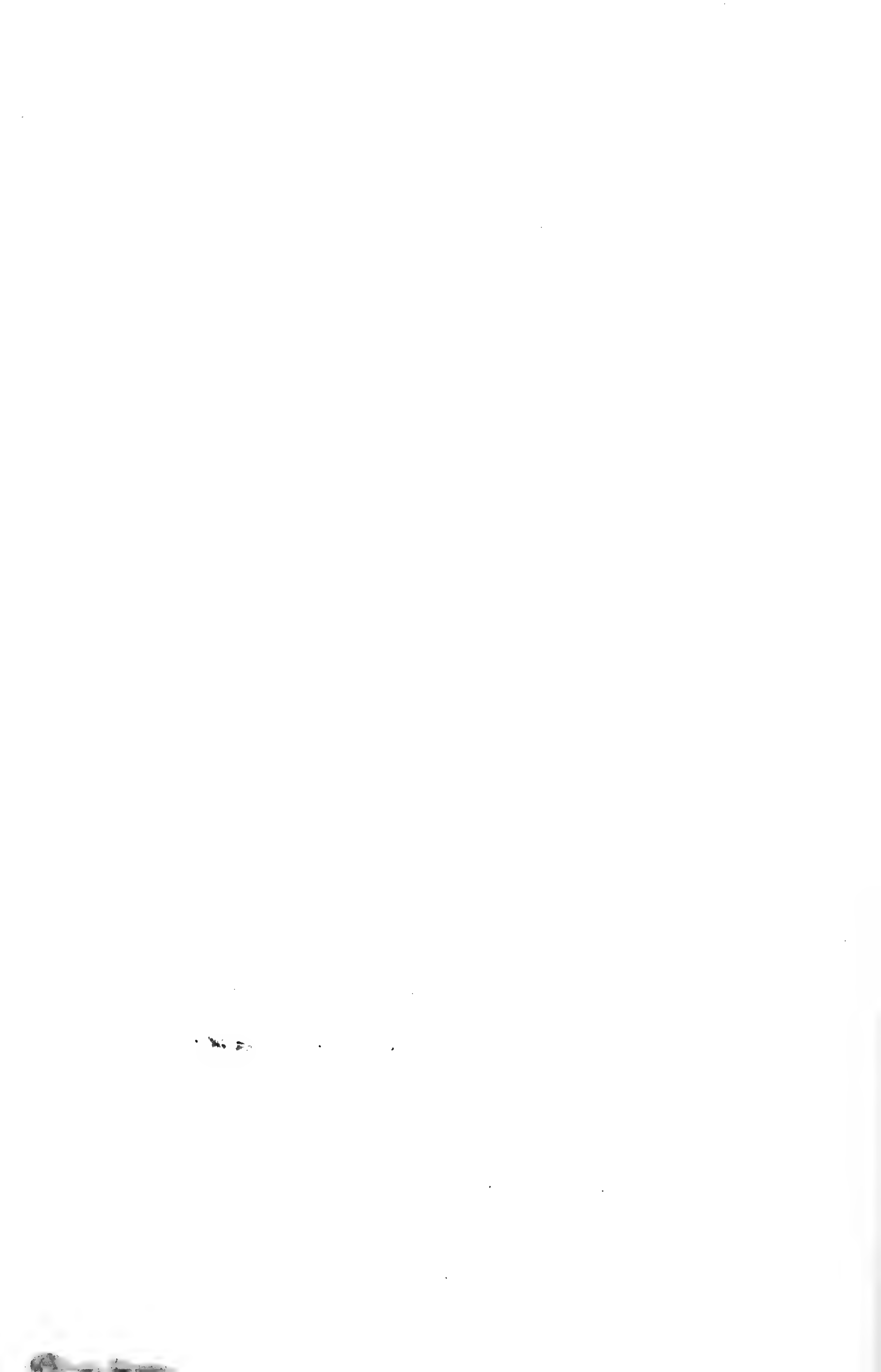
January 31, 1952 Temps. $^{\circ}\text{C}$. 1" snow ^{in night} fell, + rain earlier, during night. Left 7:10 a.m. from camp + hunted tinamous near km. 143 from 7:45-9:45, + shot 2 ♀♀. Returned to camp.

February 1, 1952. Departed 8 a.m. + drove ^{to Arequipa} to Arequipa, arriving 4 p.m. Rain from Salinas on, overcast + raining at Arequipa. Road bad - two bridges out beyond El Salto Solitario, + wide washes at two streams nr. km. 23 + 20 from Arequipa. Plenty of mud + chuck holes. Stopped some. Summer (morning only work) schedules in effect. Camped nr. km. 9.

February 2-4, 1952

Arequipa, Peru

Found Mrs. Neller back + stayed at her house. Shopped, visited gun permit (109 Ugets) and Extranjera people, prepared specimens for shipment. Mrs. Neller has a pet young jaguarundi, Dromys, + 2 Ateles from Tambopata area, + pet Dussumyr bought in Arequipa (almost every day ^{now} one is offered for ^{sale}), + a penguin from near Lima, all tame house pets (fox on chain + not too tame). From area below Sandia she had noyana



Journal

February 2-4, 1952

Arequipa, Peru
(eastern & white tipped)
and another (purchased) deer (pudu?), 2 kinds peccary, 2
Dinornis, pacas, agoutis, ateler, Tamandua, & others. Another
skins included several of a marmoset, several of the tarctora (a
big rat, Dactyl --- ?), 2 kinds squirrels, Cavia, a few gray
hawk, a few several mice, hinkajou, coati. I gave her
\$1000 to ship my box of specimens by air. Sent goose skull
& 2 fox skulls by certified air (5/10).

February 5, 1952. Completed business & left about 2:30.
Drove to about km. 91 & camped. Hard rain & rivers
high & road running with water from Arequipa to
Salvador. I was last car through (high water).

February 6, 1952.

To Huaylarco 15000 ft. Arequipa

Overcast but dry all night. Drove on to camp, barely
getting across river near km. 91. Men at Salinas said
that recently he sent two ^{wildcat?} puma (Cooncillos) bitterns to Arequipa
to sell. Snow in evening.

February 7, 1952. Temps. 0°, +8°C. Light snow on ground. Hail
& snow after 2 p.m. Worked on tire repairs & other chores. Nursing finger
smacked between rocks.

February 8, 1952. Patches snow on ground. Overcast. Watched vicuñas
8-12 M. Mary watched in afternoon. Hail & snow after 5 p.m.

February 9, 1952 1/2" snow on ground. Ice 1/4" thick. Watched
vicuñas 7:30-12. Mary watched 1:30-3:30. Temps. -3°C,
+11°C. (in p.m. since yesterday a.m.). Clear early morning, slowly
clouding. W. wind in afternoon. Rain at 4 p.m.

February 10, 1952. Clear at 6 a.m., then clouding up rap-
idly. 0°C. last night. Mary watched vicuñas in morning. I

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February 10, 1952.

Huaylorco, 15000', Opto. Arequipa

watched 2-4 p.m. Hail + snow 2:15 - 5 p.m. Pearson's arrived.

February 11, 1952.

3" snow on ground. With A. & O. Pearson

hunted Tinamotis near km. 143. Saw 3 but got none. Back at

camp 10:30 a.m.; most ground now covered until after 11 a.m.

Watched vicuñas 1:30 - 3:30 near Peñone. Saw newborn juv. Rain, hail, snow 1 p.m. - 4 p.m.February 12, 1952. Dry snow on ground. $\frac{1}{10}$ cloudy 7 a.m. Hunt 9/10

by 11 a.m. Watched vicuñas 7:30-10:30 a.m. & O. Pearson photoed some.

Flock of ⁷⁰~~50~~ hullators near head Lake Peñone, & $\frac{1}{2}$ flemingia. Watched

vicuñas 2-3 p.m. near km. 133. Snow & rain in afternoon.

February 13, 1952. Overcast. Snow on ground from last evening.

Watched vicuñas (incl. juv. born Feb. 10) from 8-11:30 a.m. Returned to camp. Mary watched some in p.m.

February 14, 1952. Little rain but overcast all day. Watched vicuñas in morning; Mary watched juv. near 133 in afternoon.February 15, 1952. Overcast; some rain & hail. Watched vicuñas

7:30 a.m. to 1 p.m. Mary & A. Pearson watched in afternoon. Fox

got away with trap but later found & shot (see O. Pearson notes).

February 16, 1952. Temps. $+1\frac{1}{2}^{\circ}$, $+8\frac{1}{2}^{\circ}$ C. since yesterday noon.Overcast & calm. Watched vicuñas 8:15-12:30, ^{+3-4:30.} Wind by noon &

occasional sprinkle. Hail & snow 1-3, & 4:15+. No new juv. vicuñas

yet. Pearsons & my family went to km. 55 area (from Peru) to look for tinamous & nests.

February 17, 1952. Temps. 0° , $+7\frac{1}{2}^{\circ}$ C. Thin cirrus overcast & $\frac{1}{10}$

cumulus at 7 a.m. Watched vicuñas & took brachychromes 7 a.m.-11, 12 M.-

5 p.m. No new juv. discovered. Slight sprinkle in late after-

noon. Saw 2 condors. About 100 geese at road end of Lake Peñone

C. Koford
1952

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Journal

February 18, 1952

Huaylara, 15000', Depto. Arequipa

Temps. -2°C , $+10\frac{1}{2}^{\circ}\text{C}$. Stars last night. Clouds overcast but calm & sunny in morning. $\frac{8}{10}$ cumulus nimbus by 3 p.m. Watched vicuñas 8:30 - 1 p.m., 3 - 5 p.m. Saw newborn juv. and another a week old. First signs of σ vicuña taking interest in ♀♀. Some rain & hail late afternoon.

February 19, 1952. Temps. $-\frac{1}{2}^{\circ}$, $+11^{\circ}\text{C}$. No precip. last night. Fog, then overcast this morning. Delayed by water in gasoline. Watched vicuñas 10 a.m. - 4 p.m.. Occasional light sprinkles. $\frac{2}{10}$ cum. nimbus by 2 p.m. Heavy hail 3 - 3:30. Rain in evening.

February 20, 1952. One year since leaving Berkeley. Temps. $+\frac{1}{2}^{\circ}$, $+10\frac{1}{2}^{\circ}\text{C}$. Temps. taken in shade under trailer about 8' above ground. 7 a.m.; clouds & cir.-str. overcast; $\frac{4}{10}$ low cumulus. Watched vicuñas 8-11, 2-5. Rain & snow 1 hr. midday; again 5 p.m. ^{& in evening}. A second juv. now in one group 7 adults.

February 21, 1952 Overcast & mist. Watched vicuñas 7 a.m. - 3:30 p.m. Temps. 0° , $+10\frac{1}{2}^{\circ}\text{C}$. Overcast all day. Hail & snow for $\frac{1}{2}$ hr. mid-afternoon. Parsons & family returned in evening.

February 22, 1952. 7:30 - 9:30 a.m., watched & photoed vicuñas, & watched 1:30 - 4 p.m. Overcast all day. Hail in mid-afternoon.

February 23, 1952 With O. P. & Mary drove to El Solitario for gas & to km. 100 area & hunted Rathoprotea. Shot 2 of these & returned to camp. Overcast except for about 2 hours at midday. Man (Andrés Gutierrez) at Solitario said foxes born in December & that he had sold 2 recently.

February 24, 1952 Overcast, rain, snow in morning before 8:30. Watched vicuñas 1 hr. Parsons departed about noon. Car repairs. Rain after dark.

February 25, 1952. Frost & $\frac{1}{8}$ " ice in morning. Clouds,

Journal

Vicugna

February 25, 1952

Huaylarco, 15000', Dpto. Arequipa

43/10 cumulus by 8:30. Watched vicuñas 7:10-12:15, 2-5:30 p.m. One new juv. near 135.6. No precipitation. No traffic - holy holidays?

February 26, 1952

Some stars & no precip. at night (or since even of 24th). Frost. Watched vicuñas 7 a.m. - 12 M. New juv. at 139.1.

Bathing ^{vicuñas} in morning.

Car stuck in mud & removed. Mary watched 4-5 p.m.

No precipitation. Only 2 trucks & 2 cars ^{passed} on road all day.

February 27, 1952

7 a.m., $\frac{1}{2}$ ci.-str.; no precip. last night. Frosty morning. Noon, $\frac{7}{10}$ thick cirro-stratus, $\frac{1}{10}$ cirrus below, & fair wind from W. Ground & streams driest in almost 2 months. 15 \pm flamingos at ^{road} end of Lake Peñón. W. wind & clearing even more in late afternoon.

February 28, 1952

6 a.m., $\frac{2}{10}$ cirrus clouds. Sunrise 5:45 at camp. Frost. Temps. -5°C , $+12^{\circ}\text{C}$. No rain since evening Feb. 24. Watched vicuñas 8-12, 2-3.

February 29, 1952

-5°C min. Frost. $\frac{3}{10}$ ci.-str. at 7 a.m. Watched vicuñas 8-12:30, 4-5. $\frac{6}{10}$ cumulus by evening. No rain during day. Watched birth of vicuña & saw 1 & 2 cubs try to get it from mother.

March 1, 1952

$\frac{1}{2}$ overcast in morning; all in afternoon.

Hail for $\frac{1}{2}$ hr about 5 p.m. (first precip. since Feb. 24). Watched vicuñas 6:45-8 a.m. & saw copulation for first time. Mary tried to trap viscacha most of day.

March 2, 1952

9/10 cumulus by 9 a.m. Frosty morning.

Car repairs. Mary caught ad. φ viscacha in trap. Rec'd note from Reason at km. 131 (from Puno) & visited P's in afternoon. They had Rathoprostia nest under observation. Rec'd bear cub sent by James Karger, Oregon of London.

March 3, 1952

Clear & frosty morning, clouding up, & snow 4 p.m. until dark. Watched vicuñas 7-10, 2-4. Built bear cage. Thomomys in flocks 10 \pm .

Journal

March 4, 1952

Huaylarco 15000; Dpto. Arequipa, PERU

Frosty + 1" snow, crusty, on ground. -3°C . Last night. Watched vicuñas 6:40 - 10:30 a.m. 8/10 cumulo-nimbus by 1 p.m. Observed & photos newborn vicuñas. Snow 3:30 - 4:30 p.m.

March 5, 1952

All alto-stratus overcast 6 a.m., + calm. No frost. Watched vicuñas 6:45 - 8:30, then drove to Salteras for gas + supplies + returned about 2 p.m. Shot ³ ~~Ata~~ Tenimotis near km. 135, + 4 viscachas nr. km. 121. 8/10 cumulus in afternoon but no precipitation.

March 6, 1952

Clear + calm + frosty. Temps. -2° , $+10^{\circ}\text{C}$. Watched + photographed vicuñas 7:30 a.m. - 1 p.m. 7/10 overcast by 3 p.m. + light hail for $\frac{1}{2}$ hr.

March 7, 1952

Clear + calm + frosty. Temps. $-3\frac{1}{2}$, $+10\frac{1}{2}^{\circ}\text{C}$. 4/10 cumulus by 1 p.m. Watched & photos vicuñas 7-12:30, 2:30-3:30, 5:30-6. Light hail + snow for $\frac{1}{2}$ hr. about 3:30.

March 8, 1952. Clear, calm, frosty. Temps. -7° , $+11^{\circ}\text{C}$. Drove to km. 131 from Puro, where Parsons were camped. Saw dead skunk at km. 136. An aplomado falcon at km. 133 was eating a dove (?), feathers flying. Stayed all night. No rain all day.

March 9, 1952 Hunted tinamous. Frosty clear morning. At 2 p.m. drove back to Huaylarco camp.

March 10, 1952. Fog + frost but not very cold (estimated -1°C). Arrive here x Watched vicuñas 6:15 - 9:30. Set 40+ traps, among rocks. 100+ geese at head of lake, + 6+ flamingoes. Puna teal & Anas cristata also there. Road worker gave me 2 downy young Chloaephaga. Full moon. No rain today.

March 11, 1952

Frosty, thin cirro-stratus, calm, at 6 a.m. Humine 5:50 at camp. Watched vicuñas 6 - 9 a.m. Traps held 4 P. sublimis + P. darwini, 2 A. jelskii. Left traps in place. Set up 2 mice + 2

Journal

March 11, 1952

Huaylarco, 15000', Dpto. Arequipa, Peru

birds. 7/10 cumulus by 3 p.m. Wind all afternoon. Rain & snow 5 p.m. - day

March 12, 1952. Fog in morning, ^{TO near Tmicopaka, 14000'} persisting until after 8 a.m.watched vicuñas 6:30-11 a.m., intermittently. Took up traps; catch a *P. sublimis* (descended). Drove to km. 131 from Puno & camped with PearsonMarch 13, 1952 Shot & examined an *Rathoprostia*. ^{to Huaylarco, 15000 ft.} Frosty morning; clear last night. Returned to Huaylarco camp about 4 p.m.March 14, 1952. ~~Was~~ Light frost & clear, clouding up somewhat (to 5/10) during day; fair E. wind all day. Watched vicuñas 8-1, 4-5. Shot an *Onychomys leucogaster* on Lake Puno. *Thomomys* in flocks 20±.March 15, 1952. ^{To Arequipa, Peru} Left trailer at road camp & drove with family to Arequipa, the drive taking about 6 1/2 hrs. Descended thru fog cloud from about 13000 to 10000 ft. Have been sent to Mrs. Heller. She said my box specimens shipped Mar. 10 by air. Camped near Arequipa; overcast but cleared by midnight.

March 16, 1952 Sunday. Visited with Mrs. Heller. Then to hotel. Visited the A. Williams & C. Nicholsons in afternoon. Cloudy afternoon but no rain.

March 17, 1952 Shopped in Arequipa. Camped out.

March 18, 1952 Shopped in Arequipa. Departed about 2 p.m. Drove to about km. 90 & camped. Fog from 10-14000 ft.

March 19, 1952 Frosty cold night. I came down with fur & axes. Returned to Huaylarco area & moved trailer to near Lake Puno near km. 133.8. Huaylarco, 15000 ft.

March 20, 1952 Sick all day. Mary watched vicuñas & saw 2 copulations. Nail about 4 p.m.

March 21, 1952. Sick but recovering. Mary drove to near

Journal

March 21, 1952 Huaylarco, 15000; Dpto. Arequipa
 Tinicopalea & visited Pearson who had 4 tinamou nests
 under surveillance. Heavy hail about 4 p.m. A man walk-
 ing on road gave me nest with 2 blue eggs, finely speckled, which are
 similar to pictures of eggs Phrygilus in Goodell et al.

March 22, 1952 Overcast morning. Watched vicuña 8-10:30
 a.m. Rain & snow at 1 p.m.

March 23, 1952 2" snow on ground at Lake Pizana. Melted
 about 9:30 a.m. Watched vicuña 7-9 a.m., 1:30-2:30.
 Moved trailer to summit, about km. 143, in after-
 noon. Mary searched for Tinamotis tracks in morning.
 New camp near good Tinamotis hills.

March 24, 1952. Went to near Tinicopalea & visited O. Pearson.
 My family all with colds. O.P. showed me 2 Nathoprocta nests &
 we shot 4. I saw a teal family with $\frac{1}{2}$ to $\frac{3}{4}$ grown ^{young}. Re-
 turned to 143 camp. Light snow at night.

March 25, 1952 1-2" granular snow. Sunrise, 6 a.m. Mary looked
 & found nest 1. Visited O.P. 9 a.m. & finished.
~~for Tinamotis tracks. Watched nest 1 1:30 to 4 a.m. to~~
March 26 ~~Persons arrived our camp. nest 1 (Tinamotis)~~
 & saw egg laid. O. Pearson watched 2-6 p.m.
 - $5\frac{1}{2}^{\circ}\text{C}$. last night. 1" snow on ground.

March 27, 1952 I watched Tinamotis nest 1 from 5:30 a.m.
 to 11 a.m. & saw egg 9 laid. Mary watched to 2:30, I to 4 p.m.
 Nest apparently ~~deducted~~ ^{abandoned}. Tinamotis nest 2 found by Mary
 & O. Pearson by snow tracking. Started watching this nest.

March 28, 1952 1" snow at night. Mary tracked Tinamotis
 & watched nest 1 from 7 to 11:30 a.m. She found Attagis
 nest. Pearson watched T. nest 2 7:30-12:15, & I from
 12:15-4:30. No snow tonight.

March 29, 1952. Pearson & Mary watched Tinamotis nest 2.

Journal

March ²⁹~~28~~, 1952

Huaylarco, 15000', Depto. Arequipa

Two eggs apparently laid about 10 a.m. I watched vicuñas & went to Solitario for gasoline. Tinamotis nest 1 & attag- is nest destroyed by fox or dog. Snow in late afternoon.

March ³⁰~~29~~, 1952. A. & O. Pearson trashed tinamotis ^{in snow} nest 7-9 a.m. I watched nest 2 6-7 a.m. & 9:30-10:30, then O.P. watched until 2:30. Felis ~~cat~~ col taken in a Pearson trap. I watched vicuñas 1:30-4 p.m.

March 31, 1952. No snow. I watched nest 6:30, & 9-10:30. Mary took a Peromys in daytime, & 2 A. jelskii. Kofords & Pearsons drove to Tuncopalca, km. 123 from Puno. Pearson skinned a Notoprocta nest there. Fished for trout. Pearsons stayed & Kofords back to km. 143 (from Arequipa) camp.

April 1, 1952. No snow. I watched Tinamotis nest 2 9:30-11 a.m., then took up Mary's to traps (catch 1 P. boliviensis, 1 Akodon andersoni, 2 A. jelskii). Returned to camp. Mary went down road & watched vicuñas in afternoon. Windy afternoon & $\frac{1}{2}$ overcast but no precipitation.

April 2, 1952 No frost but ground frozen. $\frac{4}{10}$ sun & clearing. Watched Tinamotis nest 2 from 6 a.m. - 11 a.m., & Mary watched 1:30 to 5:15 p.m.; bird off only 7-9 a.m. No precip.

April 3, 1952. $\frac{2}{10}$ sun; frost; cold N. breeze. Visited Tinamotis nest 1. Watched attagis. Moved trailer to km. 137 from Arequipa. Still 300± sheep in 136-137 area. $\frac{8}{10}$ cumulus 3 p.m. Watched vicuñas 3:30-6 p.m.

April 4, 1952 Watched vicuñas 5:30 to 10 a.m., 3-5:40 p.m. Overcast morning. Light snow in late afternoon. Saw 20± sand-pipers (Baird?) & small plovers (C. alticola?) at edge Lake Peñane. Still roats & gulls on lake.

April 5, 1952. 1" snow on ground. Looked for Tinamotis tracks

Journal

- April 5, 1952. Huaylarco, 15000'; Dpto. Arequipa
 and checked nest 2 6-10 a.m. $\frac{1}{2}$ cumulus clouds. Mary watched vicuñas in afternoon. Snow in late afternoon.
- April 6, 1952. ^{looked for Ternstroemia tracks in snow and} Mary watched vicuñas in morning. I watched 3:20-5:30 p.m. No precipitation.
- April 7, 1952. Frozen water in gas line delayed me until 9:30. Watched vicuñas all day until dark. No precipitation & few clouds.
- April 8, 1952. Watched vicuñas in morning. Checked Ternstroemia nest 2 and found all well. Set 15 snap traps ^{on} sandy ground among Festuca near Lake Píñone & a 3rd steel trap near nest (caracara in one of others). Shot a Phyllis with nest & a M. curica. Saw pair black & rufous-yellow Spizella near rocks. Shot A. speculoides for pot.
- April 9, 1952. Mary watched vicuñas in morning, I in afternoon. Moon nearly full. No precip. & few clouds.
- April 10, 1952. I watched vicuñas in morning, Mary in afternoon. 2 juvs. seen shortly after birth. Few clouds but light snow for $\frac{1}{2}$ hr. Moon full. My traps by Lake P. held 0.
- April 11, 1952. Cold clear frosty morning. I checked on Ternstroemia nest 2: all well, & I watched it until 5 p.m. 10 snap traps held 2 imm. & 2 ad. Phyllotis darwini (discarded all).
- April 12, 1952. Cold frosty morning. Watched vicuñas most of day. 15 snap traps near Lake Píñone held: Hesperomys; tracks of several mice seen in sand near traps.
- April 13, 1952. Watched vicuñas from 5:30 a.m. ^{to 11 a.m.} Cold frosty morning. Thick snow large today & ^{little} no wind. Walked over nearby hills for $3\frac{1}{2}$ hrs. in afternoon. Ptilocercus in groups up to 4 common. Mary watched vicuñas evening.
- April 14, 1952. Watched vicuñas 7 to 7:30, 3-5. Drove to habitats for

Journal

April 14, 1952. Monday Huaylarco, 15000', Depto. Arequipa
garabine, + raton. One P. sublimis in traps near lake - augmented line
to 25. Cloudy at midday + snowstorm 3 p.m. Bat time check. We were 20
min. behind yesterday.

April 15, 1952. About 1/2" snow on ground. Arrive clouds +
cold wind. Watched vicuña 8 a.m. - 3 p.m. Anaprops held a
Hesperomys + imm. P. sublimis.

April 16, 1952. Frosty. Examined traps, watched vicuña on
gravel pampa, + collected food plants. Took up snap traps
which held ad. + 2 imm. P. sublimis + a Hesperomys. No precip.

April 17, 1952. Frosty clear morning; 2/10 snowmelt at noon.
M. watched vicuña in morning, & in afternoon. No precip.

April 18, 1952. Frosty clear morning. Watched vicuña in
morning. 300+ sheep still camped opposite km. 136. Moved
camp to near km. 143. No precip.

April 19, 1952. Ci - str. overcast; little frost. Watched
Tinamotis nest 1 6 to 10 a.m. + took an egg for sampling.
Saw 2 Pago Phrygnis mitchelli, Capella, Mitrisalis aymana (in
small groups), Erolia sp., Muscivora canina, Coriobates, +
other birds near stream thru Distichia mat.

April 20, 1952. Ci clouds. Watched Tinamotis nest 6:30 to
9 a.m. Found lion tracks 200 yds. from nest - made since
April 14 a.m. About 15 traps set in sand among spiny Festuca
clumps held 2 Hesperomys (described?). Shot a Phrygnis
in afternoon. Gulls + cots (mid. juv.) on nearby lake.

April 21, 1952. Watched Tinamotis nest in early morning
to 9 a.m. Shot a Capella + Phrygnis in afternoon in a bush
not near haul. Nothing in snap traps but lizards.

Journal

April 22, 1952

Huaylara, 15,300', Dpto. Arequipa

Shot a Phrygilus, Agriornis, + brown flycatcher among rocks on barish hill near camp. Many juv. Diusca + Cenolobes in this area. Still 200+ sheep grazing daily in this area. Increased snap traps to 30 + set 5 near old stone corral. All overcast + a few flakes snow in early afternoon.

April 23, 1952. Clear morning. Watched Tinamotis nest 6:30 to 9 a.m. + saw bird "freeze" for an hour. Many watched nest in afternoon. Snap traps held 1 Hesperomys + 1 A. auduboni; put them up. Two juv. red-brown spine-tails seen (shell 9/10 ossified).

April 24, 1952. Clear, light frost. Sunrise 6:10. Watched Tinamotis nest 6:35 - 10 a.m. Bird not off til 8:45 + back 45 min. later. Watched nest 2:30 - 4:30. Unusually calm + there warm today until after 4 p.m.; then 2/10 cum. nub. + a few flakes snow. Snaptraps held imm. ♀ Hesperomys; discarded.

April 25, 1952. Clear, frosty. Watched Tin. nest 6:50 - 9:20 a.m. a steel trap held ♀ D. ussigei, 1065-370-155-100, no emb. Just black areas in ut. horns, 2 R 3 L. Snaptraps in Festuca + sand held 1 Hesperomys, 1 P. sublimis imm. (discarded). Saw a pair of teal with 5+ small flightless young. April 18 I saw a luteo-like gray hawk, white tail + black terminal band, fly to nest of sticks atop cliff S. of hem. 134.7.

April 26, 1952. Clear morning; 3/10 cumulus in afternoon. Watched tinamou nest in morning; vespertinus in afternoon. Imm. P. sublimis in snaptraps + 15 traps stolen by Indian. Took up remaining traps. Sunset 5:40, rise 6:10. Shot 2 Anas cristata ♂ + ♀ with elongated crest, for pot. Yesterday shot a ♀ visiacha with 1" long embryos.

April 27, 1952. Clear morning; 5/10 cumulus in late afternoon.

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April 28, 1952

Huaylarco, 15000', Dpto. Arequipa

Watched tinamou nest 6:45 - 9 a.m. Followed & searched for tracks tinamous most of day, checking nest in afternoon. Clear night.

April 28, 1952. Clear morning; sunrise 6:10. Watched Tinamotis

nest 6:35 - 10 a.m. Drove to Inata for gas + supplies + return (their time 10 min. behind mine). Saw 15 ± Attagis, all full-sized appearing, in a flock on Inata road. Max. cloudiness about 3/10 today.

April 29, 1952. Clear morning, ^{upto 5/10 clouds late afternoon.} Watched tinamou nest 6:30 - 10 a.m. Built rock blind for watching. Puma had taken bait at shot trap.

April 30, 1952. Clear calm morning. Watched Tinamotis nest 6:30 - 10 a.m., ^{+ 1:20 - 4:30 p.m.}

sampled egg; pipped. Put 2 whole unio at puma set. 5/10 cum. at 4:30 p.m. but no precipitation.

May 1, 1952 Clear, calm. Sunrise 6:10. Watched Tinamotis nest 6:40 a.m. to 10:30 a.m., 3:15 - 4:30 p.m. Egg taken from nest yesterday hatched today. About 5/10 clouds + cold winds 4:30 p.m. Clear night.

May 2, 1952 Clear, calm, frosty. Sunrise 6:10. Watched Tinamotis nest, 6:40 a.m. - 11 a.m., 1:40 - 4 p.m. 4/10 cumulus + fair NE breeze at 2 p.m. Chick seen at nest but did not depart.

May 3, 1952 Clear, calm; light frost. Watched Tinamotis nest 6:45 a.m. - 8:30 a.m. Fresh puma tracks 200 yds. S. of nest. The Mitriopelia cynerea heard flying + seen in pairs + several, every day. No hummingbirds seen since before April 1. Tinamotis brood left nest & was collected. In late afternoon drove to Tincapalea and a few miles ¹¹⁵ beyond. No clear all day days yet this year; some clouds in p.m.

May 4, 1952

To Juliaca, Dpto. Puno

Drove via Santa Lucia to Juliaca & camped.

Journal

May 4, 1952 To Juliaca, Dpto. Puno, Peru
On lake near (before) Santa Lucia, coots building
nesting islands. Sunday.

May 5, 1952 Shopped, repaired tires, visited Duffie.

May 6, 1952. To nr. Sicuani, Dpto. Cuzco
Departed 8:30 a.m. from Juliaca & drove to La Raya, then
on to 25 miles past Sicuani & camped. The Cuzco
side of La Raya wetter, greener, than other side, & so
much agriculture (barley, other crops) that difficult
to get off road or 200 yds. from people.

May 7, 1952. To Paucartambo, Dpto. Cuzco
Departed 8:30 a.m. & drove to Urcos, then beyond &
down road to Paucartambo (80 km. off Cuzco road
on excellent ^{dirt} one-way road), then about 8 miles be-
low P. to trees where found Pearson camped
at 10500'. Camped with them. They had formerly camped
a few (10 \pm) miles farther down road at ^{Tree} Los Cruces,
a branch off onto a ridge above jungle. Road goes
70 km. beyond Paucartambo down into jungle (end
road Santa Ysabel).

May 8, 1952 To nr. Cuzco, Dpto. Cuzco
With Pearson, left & drove to Cuzco. Shopped.
Drove on a few miles toward Abancay & camped.
Near Paucartambo camp Pearson got on Odocoileus,
& Penelope (not saved). I saw 50 \pm Columba fasciata
& other birds.

May 9, 1952 To nr. Abancay, Dpto. Apurimac
With Pearson drove all day with frequent stops. Road

Journal

May 9, 1952 To nr. Abancay, Dpto. Apurimac
 climbed to 12000', down to 6500' & across Apurimac river,
 then up to 12000' & down to Abancay, thence down more
 on Puquio road & camped at 6500'. 6500' elev. in eastern
 thorn tree, dry hot belt but bananas & sugar cane at
 next higher level (as Abancay).

May 10, 1952 To nr. Chalhuanca, Dpto. Apurimac
 a few traps set last night caught long tailed pale ^{gray} bellied
Arzomys - like mouse. A few bats seen. Drove up the
 Pachachaca River thru pepper tree - eastern area. Shot
 a Merganetta at 8000' & O.P. one of a pair at 11400' (altitude),
 (later 30 km. on road beyond Chalhuanca). Shot a Crotophaga
 at 7100' & saw grackles, & large dove, sparrow hawk.
 Camped 150 km. on Puquio road in grass & brush area.

May 11, 1952 To Km. 181, Puquio road
 Pearson got ⁴ ~~some~~ akodon boliviensis like mice in traps set
 last night. We drove on toward Puquio. Attypleno grass-
 lands, 13700' at km. 160. We drove on to km. 181, the
¹⁴⁷⁰⁰
 apparent summit, seeing many llamas & alpacas &
 a few vicuñas. We drove about 3/4 mile off road
 to NW on a side road & camped & set many traps.

May 12, 1952 To km. SW Chalhuanca ¹⁴⁷⁰⁰, Dpto. Apurimac, Peru
 Frosty clear night; moonrise 9:30. Traps held several
Phyllotis pictus. Saw gray Phrygilus, Chloephaga, Co-
laptes, Spinus (black & yellow), Cinclus, one turkey vulture,
 & other birds. Heard several Tamias P. & Pearson shot
 one (♀, 2 1/4 lbs.) Many took A. jelskii & Chinchilla in traps.
 Staked up my 35 traps & rest on rocky slope, Puma wait,

Journal

May 12, 1952

25 mi. SW Chalhuanc, 14500' Dpto. Apurimac

Pycnophyllum, ^{tata} ~~grass~~ (1' high, narrow leaves), closely cropped
Festuca here, + the sticky Oryzobolus. Saw turkey vulture, Agelaius,
Muscisaxicola (cinerea?).

May 13, 1952

To 21 mi. ENE Piquio, 14500', Dpto. Ayacucho

My traps held 1 P. sublimis + 1 P. pictus (imm., discarded).
 A. Pearson got one Akodon boliviensis. We departed + drove toward
 Piquio. At about km. 215 got up to flat + rolling plain of
 close cropped Festuca (?) + other grasses, where many boulders
 + many vicuñas. Pearsons saw a trio of Ternstroemia + shot
 one. I shot 1 of 2 Phrygnis mitchelli on wet ^{green} soil. We
 camped + set traps in rocks + grass, nr. km. 65
 from Piquio. ^{Saw flamingos on one big lake.} I set 30 traps on barish ground near boulders
 + on boulder slope below small cliff where tall bunch grass!

May 14, 1952

To 9 mi. NE Piquio

My traps held 1 Hesperomys (grass), 5 P. sublimis, 1 P.
pictus (baby), adult + juv. Chinchilla, adult P. darwini.
 All but ad. Chinchilla, P. darwini, + Hesperomys discarded.

Pearson got an A. jelskii. We put up specimens + departed.
 Many lakes. Saw coats caraculating on grass island.

At km. 46 from Piquio road started to descend + few
 vicuñas thereafter. Camped km. 30 where broad leaved
 tata, appressed leaved tata in yellow flower, + 3' high
 ichu + some rock cliffs + walls. Set traps. I shot an
Upucchoia + a spine tail; ^(juv. - discarded) saw Muscisaxicola sp. +
 many small doves. O.P. + I shot 3 Nothoprocta O. species.
 Took one P. pictus (♂ 1450) from trap.

May 15, 1952

Traps held 9 P. pictus, 1 each of
P. darwini, A. boliviensis, + P. sublimis. Put up A. b.,

Journal

May 15, 1952

To nr. Piquio, Dpto. Ayacucho

P.O., & 2 P.P. We drove on to Piquio over bad dirt road.

Vegetation seen to 13000' (7). Piquio, a dirty mud town, at 10500'. Rocks & brush at this & higher levels - appearing like Lihua area - with about $\frac{1}{2}$ or $\frac{3}{4}$ of ground clear of brush. Road ascended to 11500'. Shot a green hummer here & saw big Turdus, Circus, & other birds. Cactus, brush to 15' high, many rocks, & a green lark. Road descended to a river, then ascended again. We camped in rather dry area where cactus & brush at 11500', about ³⁰20 mi. on road from Piquio. I set no traps but others did.

To nr. Nazca

May 16, 1952. Traps took Alcedo, Phyllotis, Oryzomys?

We drove on. Road ascended to over 13000', to rolling grass green area where many vicuñas (40± mi. on road from Piquio). Then vegetation drier as descent commenced. Vegetation to 12400', rather continuously. Rocky dry barren area. Burned up looking 10' high leafless trees with seed pods 4" long at tips branches (7000'). Organ pipe cactus at 5000'. at 4000', 20' high ^{green} "oasis" - like trees in bottom broad river bed, & same near Nazca at 3000' where much cotton growing. We parted from Pearsons, giving them our specimens to take to Berkeley. They to Lima. Stopped in Nazca & camped 5 miles toward Chala on rocky sandy flat where mesquite like trees & bushes like Atriplex. Many fox tracks.

May 17, 1952. Caught 2 house mice in 10 traps set last night. Warm here at night. Drove on thru rocky barren area. Then sand dunes & medanos. Road to coast at km. 600 (Taraca?) where broad sandy beach & strong wind

Journal

May 17, 1952 To nr. Chala, Dpto. Arequipa
 from sea. Saw 4 condors at once low over beach & picked
 up Albatross skeleton. Gray gulls $\frac{4}{N}$ a large white bellied black
 bodied gull common, especially former (1000+). We drove on
 to near Chala & camped on beach. Strong wind from S. in after-
 noon & breeze from land (E) in night.

May 18, 1952

Nr. Chala

Two Rattus in traps set near bushes. Watched condors
 most of day & saw up to 4. Also saw: black shearwat-
 ers (5000±), boobies (200±), black bodied gulls (50±) - [juvs.
 with black heads; ad yellow bill with red tip, greenish legs] -
 500± black skimmers, 200± pelicans, 50± Banghamville for-
 morants (commonest washed ashore carcasses), Turkey vultures
 (30±), black vultures (3), comorants with red legs & white
 mark on side throat (10±), gray gulls (2000±). Saw
 condors & turkey vultures feeding on dead birds on beach.
 In late afternoon drove several miles toward Atico & camped.

May 19, 1952

Nr. Atico, Dpto. Arequipa

Drove to 3 mi. W ($4\frac{1}{2}$ by road) of Atico & camped.
 a few boobies, & 2 condors & 2 or 3 Turkey vultures
 seen. Clear small sandy beach. Paving ended km.
 678, thence rather curdruaged dirt road. Atico 89 km.
 from Chala. Bare boulder & rocky hills a few hundred
 yards back from ocean. I set 45 traps near
 beach & up to $\frac{1}{4}$ mile up ~~rock~~ ^{gravel} rock & sand slopes
 toward hills. Cactus, a few shrubs & a green crawling
 plant, but general aspect barren. Much mouse
 sign near rocks. Mod. breeze.

Journal

May 20, 1952

3 mi. W. Atico, Dpto. Arequipa, PERU

Traps held 2 Marmosa, 20 Phyllotis. Anta (tiny) ate parts many mice & several partly eaten by other mammals. Put up 1 Marmosa, 2 Phyllotis; discarded others. A pair oyster catchers on beach last evening. We departed, drove a few miles S. of Atico, & camped. Alto-cum. clouds in morning.

May 21, 1952. Drove on S. a wide bottomed green-lushed valley with lagoon near Pescador Pt. Then another, with river with many fish traps, near Ocoña. Saw a small green & white kingfisher & a large rail near a stream near Ocoña (many trees & field crops).

Rocky & sandy rolling deserts between green valley mouths. About 15 mi. before Camana saw 4 condors over beach. Many mounds discarded clam shells here & thousands of black sea birds (shearwaters?) streaming for miles about 300 yds. offshore. Marshy ponds inshore of sand beach near Camana. Very green, a river, bananas, sugar, cotton, at Camana (180 km. from Arequipa). More barren area S. of C., the road going up to 4000' starting about 20 km. S. of C. We camped on rocky rampa where some matorrales, no vegetation, & a good view of Chopuna & Misti, at km. 120 (from A.).

May 22, 1952

TO AREQUIPA

We drove on to Arequipa & stayed with Mrs. Keller.

May 23, 1952 Shopped & arranged to visit Chucarapi.

Departed from Arequipa in afternoon & camped on road to Toena.

To Chucarapi, 200; Tambo Valley

May 24, 1952. We drove to Heds. Chucarapi, a sugar cane ranch in Tambo Valley & were cordially received by Fernando Lopez de Comaña & nephews & invited to stay.

Journal

Dpto. Arequipa

May 24, 1952 Saturday Chucarapi, Tambo Valley,
 All departed for Arequipa, leaving us in house. A mayor-
 dano took me to El Canto & Santa Maria Hedera, near Coca-
 chaca, to look for bats. Many droppings there but
 no bats found in daytime. The green flat bottom of this
 valley about 1 mile wide. Anis common in gardens.

May 25, 1952 Set about 35 traps, 10 in garden. A marmosa
 (♀ 1457) in on trap soon after dark. No bats seen at dusk but
 seen near lights after dark - a Myotis - sized bird. Shot a
 vermillion flycatcher & an anis (specimens).

May 26, 1952 Traps held 5 Phyllotis (Put up 2) ^{& 2 Mus (1 spec.)}. Some eaten
 in traps. & 10 traps near a water ditch in green vegetation &
 cane nearly all sprung - probably by rats which are said
 to be very common in the sugar cane. At present sugar mill
 being overhauled & no cane harvested; usually cut at all ^{other} seasons.
 In afternoon Octavio - de Banaña arrived & provided me with a
 horse to visit an old mine across valley. Mine tunnel (copper)
 had 3' entrance & only about 20' deep. A downy young vulture
 therein but no bats. Many night hawks over Chucarapi town
 at dusk (♀ 1463 shot). A small kingfisher seen. Vermillion fly-
 catchers common.

May 27, 1952 Octavio provided us with a station wagon &
 driver, & our family within me were taken across the
 river on flatbed of the little railway & disembarked near Coca-
 chaca, a fair sized village not part of the Hedera. Chucarapi.
 We hunted bats at El Canto (some old sign, & 1 of 2 leaf nosed
 bats taken in ^{empty water} tunnel), Santa Maria (much old sign), St.
 Domingo (many said bats there but found none), several

Journal

May ^{27,}~~28,~~ 1952 Dpto. Arequipa, Peru
Chucarapi, Tambo Valley,
churches (droppings indicated night roosting), & in wooden
buildings at Mejia (resort town on coast; scattered droppings
but no concentrations found). Probably more bats in sum-
mer (Nov. - Mar.). Rainy season is now thru July.
In night looked at El Canto & Santa Maria. 2 Myotis seen in
room at latter & 1 caught (specimen).

May 28, 1952

To Arequipa

Departed Chucarapi 11 a.m. & drove to Arequipa & stayed
with Mrs. Heller.

May 29, 1952. Shopping & business in Arequipa. Departed
in evening & camped near cultivated fields 2 mi. E. of
Chivato. Many set 15± traps near rock wall. About 10000'
here & sold at night. To Juliaca

May 30, 1952 Many traps held 3 large Phyllotis (2 C.K. &
1 M.K. specimen), ^{an} ~~and~~ imm. ♀ (discarded), another mouse
(C.K. specimen). We drove to Juliaca. Saw a Notho-
procta about km. 102 from Puno & another near foot
first ^{down} grade on road to Juliaca. Camped in our trailer
in yard of adventist clinic. ^{500± flamingos on Lago Salinas.} Overcast afternoon.

May 31, 1952 Sunday. Saturday. Stayed in camp
& rearranged & overhauled gear.

June 1, 1952. Sunday. Ditto.

June 2, 1952. Shopped. Visited Santellano, Marangoni
wool buyer & heading local sportsman.

June 3, 1952.

To Hcda. Umayo,

Drove to Umayo. 16 mi. toward Puno from Juliaca, then
turn off to W. for 10± miles. I had a letter from owner, Anita,

Journal

June 3, 1952 Hda. Umayo, 15 mi. S. ^{Juliaca} Umayo, Dpto. Puno
to Mayordomo, Pineda. Reed & water weed shallow lake on
caserio side of hills, the bigger deeper lake to W. of a low
ridge. Silustani, a flat mesa with several fine chulpas,
between the shallow & deep lake. A mesa 300' high on an
island in big lake. Santellana arrived & hunted with
him. I shot 2 ^{yellow breasted small finches (discarded),} ~~seed eaters~~, Cinclodes, blackbird, 2 kinds grebes.
Glossy ibis, gulls, caracaras, Zonotrichia, coots, & other
birds seen. Swine pigs common along road at base
of rock walls. Santellana shot a Nothura nearby. I
set 25 traps near rocks & brush near camp (1/2 mile
down road from caserio).

June 4, 1952. Traps held, A. jelskii, 4 P. darwini, 1
wren. 6 traps taken by Andean. I shot 4 Cavia along
road. Picked up traps midday; A. jelskii & A. boliviensis there.
Put up 1 Cavia, 2 A. jelskii, 1 P. d., A. boliviensis, & 2 grebes
& blackbird shot yesterday.

June 5, 1952. Clear, warm in forenoon, calm. Shot a rail,
yellowlegs, & snipe, & 2 finches. Set 33 traps near foot
cliff near brush & grass. Saw an A. jelskii in brush 3 p.m. Cin-
clodes & spine tails common. Leosoma on shores lake & walk-
ing on surface algae in water. Plegadis, Nycticorax, Butorides
in lake; Puma eat A. magnirostris too.

June 6, 1952. Traps held 11 Phyllotis darwini, 1 A. jelskii,
2 A. boliviensis. By 11 a.m., 3 more A. j. & 2 A. b. May &
I put up some of each, & I put up cliff swallow.
Looked for bats near caserio in evening but found
none flying.

Journal

June 7, 1952.

Heda. Umayo, 15 mi. S. Juliaca, Peru

Shot Symnopselia, spine tail, Agelaius, Sicalis, near lake. Cruised on muddy lake in boats in afternoon. Shot one of 30± Anas puna. About 100 grebes like my 1473 seen, some on weed islands in lake; tan egg in one such nest. One seen with a downy grey & white young, swimming in deep water. Have seen only the 2 kinds of grebes collected tho a large flightless black one said to be here. Flamingoes seen on distant part of lake (w. end). Lechuzas also said to be here. Plenty of the "bogas," a good but small eating fish, in lake.

June 8, 1952. Prepared specimens in morning. Bartellana visited us briefly. Set 39 traps on slope near lake in afternoon, ~~near~~ lunch, rocky grass.

June 9, 1952. Traps held 9 Phyllotis (8 of pusillus type), & 6 A. boliviensis, & 1 Mus, & 1 A. jelskii, I put up Mus & 1 A. boliviensis; Mary put up a Phyllotis. Others discarded. Put up a pintail shot yesterday - common on lake, half grown young in flock. Flocks 30± Ptiloscelus on green hills near lake. Set 25 traps near lake.

June 10, 1952. Traps held 8 A. boliviensis, 2 Phyllotis (pusillus, 22 mm. ear, type). 10 traps set in a Polylepis thicket on slope near lake caught 0. Discarded all. Returned to Juliaca.

June 11-14, 1952

Juliaca, Dpto. Puno

Daily trips to Puno regarding car documents & letter of introduction from the prefect.

June 15, 1952

Journal

June 15, 1952

To Lake Arapa, Dpto. Puno.

We drove, with trailer, toward Toraco, then on rough road 12 mi. to Arapa, then 3 miles toward Chuya. Lake clear. Reeds in water near Arapa. Many lilies on beach. Steeper clean shore NE of Arapa. Camped near *Juniperus cuscalyptus* in a quebrada where there was a finca & group of Indian mud & thatch huts. Owner not in today. Set 42 traps on dry hills near rocks, grass, bushes, & also near small clear stream above houses. Vegetation like Umayo but greener. Strong breeze here. Many birds - *Turdus*, doves, *Zonotrichia*, spine tails, wrens, *Cinclodes*, *Phalaenoptilus*, *Phrygilus*, ^{gery}, & others, about trees & shrubs near the houses. A short rock male projects into lake here.

June 16, 1952 Monday 3 mi. NE Arapa, Dpto. Puno
 Traps held 12 *P. osilae*, 1 *P. darwini*, 2 *d. boliviensis* (edge stream), 2 like my 1045. Wind at night. Cirrus clouds, 5/10, in morning. Put up those catalogued (CK & M.K.), discarded others. Set no traps. Sr. Alejandro Quevedo, who has quinta here for recreation, took us for a ride in his outboard motor boat. One coot, a few *Anas flavirostris*, fliers, sparrow hawk, hummingbird, gulls, cormorants, seen.

June 17, 1952. I spent a few hours on lake with Quevedo. He has sheep ranch near Ayungaro & a ranch near Picotani. Set 25 traps near rocks, brush, grass, above caserio.

Journal

June 18, 1952

3 mi. NE Arapa, Dpto. Puno

Bought 24" rainbow trout for breakfast.
Bogas fished with ^{seine} nets by local people.
Traps held 2 like my 1045, 2 P. osilae, 6 P. pictus. Put up those catalogued; discarded others.

June 19, 1952

To Heda. Calacala, 7 mi. SW Putina

Having driven down toward Toroso yesterday afternoon, today continued on to Heda. Calacala near Putina. Much reed (totora) & marshy area between Toroso & turnoff to Putina (near Huancani), & shallow reedy lake for 3 mi. along road toward Putina. Small brown breasted black & white headed grebe, & larger white throated brown necked bird (both collected before) common on these lakes, & some Anas flavirostris & Plegadis. Found Sr. & Sra. Paredes at Calacala & camped in trader's near house. 12 mi. from Huancani-Toroso road to turnoff to Calacala. Set 25 traps in thick grass & near wet places or streams.

June 20, 1952 Traps held 4 A. boliviensis,

3 P. osilae, 1 P. pictus. A dog caught a Cavia, dark fur, in thick grass near a stream. This area greener than Umayo & with much thick grass but almost no shrubs. Marsh hawks, sparrow hawks, caracaras, Synnepelia, Zonotrichia, common in yard near trees. Discarded mice not catalogued. Saw 2 Cavia at foot rock wall in late afternoon. Took up 5 traps & set 24 additional, 21 on dry rocky hillside where some grass & shrubs. Other traps had 4 A.

Journal

Dpto. Puno, Peru

June 20, 1952

Hcda. Calacala, 13000', 7 mi. SW Putina,
balinensis at 3 p.m. Tyto pellets under eucalyptus tree.June 21, 1952. Traps held 1 A. balin., 4 P. asilae, & like
1045. Put up these catalogued. Set no traps. Saw 3 Cavia
in thick grass near stone wall & shot one (♀ 1522).June 22, 1952. Sunday. Drove about 2 mi. NE of caserío
& hunted tenacious; saw 5+ shot 3 Mathura. Set steel
traps for Cavia.June 23, 1952. Steel traps held 2 P. asilae & 1 A. jelskii. Mrs.
Paredes caught jelskii in traps in house. Several P. asilae
in sheep's wool being packed for selling. Set 25 traps
on rocky knoll NW of caserío 1 mile. ^{one Cavia taken in} steel traps.June 24, 1952. Traps held 5 A. balinensis, 1 A. amoenus
(first taken here). Saw 2 nightjars on rocky knoll. Took
up all traps. About 9:30 a.m. I left with Paredes in
truck for Juliaca, arriving about 1:30 p.m. Answered correspondence.

June 25, 1952. To Hcda. Calacala, 13000'

About 1 p.m. departed with Sr. Paredes & drove back
to Calacala. Set no traps.June 26, 1952. Set 30 snap traps near rock wall
& grass, 12 steel traps in runways of Cavia. Collected
Tyto pellets beneath eucalyptus in yard.June 27, 1952. Traps held 4 A. balinensis, 4 P. asilae, 1
like 1045, 2 A. amoenus. Took up all traps. Put up
mice catalogued by M.K. (2) and me (1); discarded others.
Drove to Toraco & S. a few miles beyond Pusi (to 15 mi
E. Juliaca) & camped near a spit dividing shallow
rush-filled bay from clear deep lake.

Journal

PERU

June 28, 1952

15 mi. E. Juliaca, Dpto. Puno

Birds: white-throated gull, red-brown small grey gull, *Circulodes*, *Upucerthia* (1 specimen), *Ptiloscoptes*, *Zonotrichia*, ^{test, *Sporophila*, *Chondestes andreae*}, a *Muscisarcophaga* (carrion-like), These near lake. Castor clumps, 10' tall, near road & houses. Barley green & cut. Many 2-3' high scattered bushes near lake. Mouse tracks in sand near lake shore among bushes. Could not shake men & boys from camp & following me so departed & drove to Juliaca. Camped in clinic yard.

June 29, 1952 Sunday

To Huancani & back to Juliaca
Drove to Huancani to visit market. Then 10 km. to Vilque Chico where a feria & several thousand people in crowd, mostly Indian. Road skirts a rather deep bay of Lake Titicaca just before Vilque Chico (gull; *Anas flavirostris* with downy young, on lake). *Plegadis* common. Pair stilts in pond near Toraco. I with bad cold. *Phryganea* ^{grass} *gargi* in Juliaca.

July 1, 1952

To Mr. Crucero, Dpto. Puno

Departed Juliaca 12:30 p.m. with Modesto Palomino, employee of Mrs. Heller, for collecting trip in Santo Domingo area. Arrived Palmera 4 p.m. & stayed with Dammert & miners.

July 2, 1952

To Agualani, below Limbani, Dpto. Puno

Drove on to Limbani & made station of Luca mining at Agualani. *Tadarida* small in garage. Camped.

July 3, 1952

To Oconeque, 6 mi. N. Limbani

Hiked to Oconeque (2 1/2 hrs.). Saw *Momotus*, *Merg. anetha*, on way. Shot & put up a *Centurus*, pewee, small flycatcher, & *Caperemulga*. The last one of 3 out on trail after dark. Set 10 snap traps in wet dark woods.

J 4

Net & Oryz.
Oryz. grass handle

5 5

6 dark Oryz - 1 piece
1 lg Oryz - skin
1 small " - disc.

Journal

July 4, 1952

Dpto. Puno, Peru
Oconoque, 6 mi. N. Limbani;

Traps held a Leomys & Oryzomys. Shot a hummer & warbler for specimens. Tomás Flores, in charge of the Oconoque station & old timer in the area, very cordial. Good room & board at \$10 per day (65¢ U.S.). Set 20 snaptraps.

July 5, 1952

To Segrario

Traps held 6 dark bellied Oryzomys (1 specimen), & 2 gray bellied (1 spec.); others discarded. Shot a ground sloth & spine tail for specimens. At 11:30 a.m. left, on foot, for Segrario. Monkey bridge below Quinton at ^{2:40} 2:40 p.m., Segrario at 5:30. Lodged at Segrario. Wooden buildings but only 1 man now. Saw several Oreopendula & 3 cobs of rock near trail below monkey bridge (Pacchuata area; food & lodging obtainable). Several Merganetta seen in river. One pair with single downy young which maneuvered well in fast water.

July 6, 1952

To Santo Domingo

Departed on foot at 7 a.m. Arrived Bella Pampa 9 a.m. a house of Inca mining, telephone to Santo Domingo, & electric plant for S. D. here. Shot ♀ turquoise (cob of rock), & 2 bats in a tunnel 10 min. walk upstream from B. P. Bottom of canyon about 200 yds. wide, half of this taken up by river bed. Bats seen in 50 yd. tunnel leading in to power plant (water turbine). At 12 M. departed for S. D. Pacapacuni, a town with plenty of groceries for sale at good prices, 30 min. from B. P. Crossed bridge at Oraya. Then 3 1/4 hours up trail to Santo Domingo mine. The

Journal

July 6, 1952

Dpto. Puno, Peru
Santo Domingo, 19 mi. N. Limbanj,

manager, Andres Dasso, had gone to college in U.S. Very hospitable. Free room & board. He said that a bear had been killed nearby recently, 3 bayupos (probably Denomys) shot in a mine tunnel about a year ago, & a tigrillo (ocelot?) trapped & shot at Pacapacuni recently (I saw pelt & bones). The trail goes on 2 days hike to La Pampa but is closed beyond. Tadarida in corrugated iron roofs of most buildings. Several dead bats with ^{very} long ears seen in one house. This mine on slope of jungle; most trees cut nearby. They say there were more animals before the furnace, emitting SO₂, was installed. Gold is melted & made into bricks here. Mine about 40 yrs. old. Woods was away in Lima. Dasso had never seen a monkey in this area. Tunguis not uncommon, however. An old power plant about an hour down hill from S.D. at Tunguipata (we did not visit it). From Aguasani to S.D. a 14 hour hike, carrying pack.

July 7, 1952 Dasso showed us around the mine area. Now said to be no bats in tunnels. We departed 1 p.m. & hiked to Bella Pampa and stayed at the house there, by kindness of Dasso, with the local power plant man, Albino Linares. Linares here 22 years. Remembered Carrizosa who was here in 30's, born in 40's. Collected 2 Carallia in power plant tunnel. Shot a dark Caprimulgus on trail at night. Coryas (brown 3 toed possum) said common here, especially where yuca

Journal

- July 7, 1952 Dpto. Puno, Peru
Bella Pampa, 16 mi. N. 2 mi. E. Limbani;
is growing. Monkeys come down when corn ripening (March, April).
July 8, 1952 Collected Carallia (3) & 3 emballonurids (?)
in power plant tunnel in day. Another tunnel, where water
ran thru inner end, had several Oreomys (2 collected).
In one tunnel, a black & rufous swallow (1557) and
blue & white bird roosted at night. Nests of former in
same tunnel. A Myotis ~~shot~~ ^{shot} by ^{electric} light at house in
evening. 10 traps set last night; 3 mice taken from
one before ^{morning} ~~evening~~, nothing in others (1 specimen, 1559).
July 9, 1952 Shot 3 red birds (shrub capped finches?)
for specimens. Common in trees & bushes near house.
When power off for repair, I entered transmission line
tunnel & found 100+ Carallia in a hot branch of
same (generator puts out much hot air, excellent
for drying specimens). At Tinguiri, across an oroya
west of Pocopacuni (across Rio Quinto), congo's damage
seen in yuca patch (Flores place).
July 10, 1952. Visited yuca patch at 6 a.m. & shot
a brown paca. Hiked on ^{foot} down trail down from
bari toward Huancacuri (1 day distant; mine there). Upon
return, we found the paco, which we had hung in the
house of "friends" for safekeeping, was already in the
pot for cooking. I salvaged the skull. Shot a
hunting & phoebe for specimens, & 2 Caprimulgids at
night near river Inambari.
July 11, 1952. Hunted in vain for congo's at same yuca
patch. In afternoon hiked upstream from Oroya.

Journal

July 11, 1952

Dpto. Puno, Peru
Bella Pampa, 16 mi. N. 2 mi. E. Limbani;

Trail good. Yucca patch $\frac{1}{2}$ hr. upstream + ~~see~~ canyon (called "puyuli" in Tumbapata) had been there. Then another $\frac{1}{2}$ hr. upstream (good trail, rather level) to a large yucca field showing much digging & tracks of pacas. No coneja showed up in evening, but after dark shot 3 ^{spotted pacas (*Canisulana*)} by flashlight (red), wounded on other, & a local hunter shot another. Shot a "manacoraco" (*Ortalis*?) ^(on July 12) in a tree & saw others. Smallest of ^{paca} given to Mrs. Heller. Made skins & skeletons of 2. Meat excellent (young pork) but skinning difficult (soft tender hide).

July 12, 1952. Prepared paca specimens. Went to same place in evening. Saw and wounded on paca but it escaped into river. Shot *Ortalis* (?) mentioned above.

July 13, 1952. Took 2 large phyllastomids in shallow shaded cave; 2 others escaped. Shot a kingfisher for specimen.

July 14, 1952. Early morning watch at Triguri yucca patch but no agoutis appeared. Shot a *Campestris* (?) woodpecker & saw another. Three large phyllastomids taken in tunnel 10 min. walk upstream from B.P. To Paccihuato

July 15, 1952 One mouse taken same spot as previous one (1558). skeleton kept. We packed, departed in early afternoon toward Oconoque, & camped near monkey bridge ($\frac{1}{2}$ hr. above houses at Pachi Paccihuato (spell?). Set 5 snap traps.

July 16, 1952

To Oconoque

A large *Oryzomys* in trap. Shot a puff bird (specimen). This was perched very quietly in shade. Killed upstream. Saw several *Merganetta*. Shot a saltator near Pictor. Rain,

Journal

Peru

July 16, 1952 Oconoque, 6 mi. N. Limbani, Dpto. Puno,
as almost every day for last few days. at Oconoque shot
a Centurus in yard of Luna Co. Stayed at Flores.

July 17, 1952 Collected birds at Oconoque. Much variety here—
perhaps 100 species. Shot 1 of group 3 Cyanolyca (?) in
trees above lower large bushes along trail near river, ^{20 min.} 4
hr. below Oconoque. These made a stringy squawk only,
two squawking when one shot. In center of trees on branches,
not periphery. A mouse in 1 of 20 traps set in wet woods.
Of birds not collected, a large green backed red bellied trogon
seen; several Oreopendula; large Turdus; many hummers &
warbler-sized birds. Atlapetes, a bittern(?).

To Aguasani

July 18, 1952 Again shot good variety of birds. a small owl
(1595) perched in open nest to trail. a Trogon and small woodpecker
also on bushes near trail. Blue & yellow Trogon (1599) in
groups of several. We hiked to Aguasani in afternoon; shot
a motmot (♀, o.n.c.; given to Santillana in Juliaca) near river.
Camped Aguasani waiting for our stuff from B.P. + Oconoque.

July 19, 1952. Put up specimens at Aguasani. Modesto hunted
birds & saw one Cavia. Departed in evening for Juliaca.

To Juliaca, Dpto. Puno

July 20, 1952. about 3:30 a.m., near Asillo, I ran jeep
off edge road & broke front axle. Left a truck in Asillo
to take car & us to Juliaca.

July 24, 1952 Lake Unayo & Jikica, Dpto. Puno
with Duffies to Unayo (45 min. from Juliaca) and
collected 5 Centropomus. Fewer nests than last visit
but 3 nests seen. 50+ of these gobies on deeper part
of lake. Returned to Juliaca.

Journal

July 26, 1952

To Cuzco, Dpto. Cuzco Peru

Yesterday prepared grebes. Scraped skins & soaked 3-5 hrs. in white gasoline, then washed in hot soap & water, rinsed, dried in sawdust. ♀♀ with eggs inside. Today took 9:15 a.m. train for Cuzco with family. Arrived 6:30 p.m. Upper Urubamba valley much drier than on our previous (May) visit.

July 28, 1952

To Macchu Picchu, Dpto. Cuzco

Yesterday visited Pisac, 33 km. from Cuzco. Cuzco region dry appearing & rocky. Much erosion on steep cultivated hillside. A series of well made terraces above town of Pisac. Cuculyzatus common near Cuzco. Today took 8 a.m. train for Macchu Picchu. This is delayed & slow. 3 hours late. Ollanta in dry temperate zone. No road Ollanta to Puente de los Reales, 25 km. below town of Macchu Picchu. Town of M.P. in humid sub-tropical zone. Road to ruins of M.P. from railroad 1 km. below town of M.P. (km. 113) to hotel at ruins. We phoned hotel & got truck to take us up.

July 29, 1952.

Macchu Picchu, Dpto. Cuzco Peru

We looked at ruins. This area has lush & often thorny vegetation. Wrens & Zonotrichia seen, & various other birds ^{heard}. Bromeliads common on near-vertical cliffs & in trees along Urubamba River. Formation & physiography like Limboc Canyon below Ocorongo but more rocky & precipitous; much granite here. In afternoon I walked down to river & 2 km. down railroad track to the finca of Miguel Maldonado. Thick sub-tropical forest in parts & cleared areas & crops (tea, yuca,

Journal

July 29, 1952 To Urobamba Valley, Dpto. Cuzco, Peru
 com, bananas, potato-like plants). Maldonado hospitable & had extra rooms in warden houses. He thought possibly puma here in March-April. Bears had been taken, Agoutis & poscar not uncommon (not Dinorings). This place at km. 114 $\frac{3}{4}$ from Cuzco.

July 30, 1952 Took family to Maldonado. He had an agouti for us. Shot by a man named Mateo in banana grove near km. 116 $\frac{1}{2}$ in early morning. Bananas, ^{green,} eaten by this animal. I saw groups 10 \pm green parrots with red head & crimson. Walked to San Miguel Bridge (where R. R. crosses river; km. 118 $\frac{1}{2}$ about) in evening. Many small birds & large Turdus in this area.

July 31, 1952. To Cuzco, Dpto. Cuzco, Peru
 a young black parson with white face in a trap I had set. Saw a ♂ Rupicola near house. Mary saw a bushy-tailed black monkey-like animal nearby yesterday. Local people said this ate chickens & had a short face (a tayra?) and was ~~not~~ common. At 9 a.m. we took train for Cuzco, arriving 4 p.m.

August 1, 1952 To Juliaca, Dpto. Puno, Peru
 Took 7:30 a.m. train to Juliaca, arriving 4:30 p.m. No progress had been made on car repair.

August 4, 1952 Mr. Juliaca
 Hiked 2 hours from Juliaca to a laguna occupied where there were giant coots, yellow bellied teal, mallards, grebes, & other water birds. Shot 5 Centropus pelma of 100 \pm there, & saw gray & white downy

Journal

August 4, 1952 Nr. Juliaca, Dpto. Puno, Peru
young. Grebes mostly in ^{water} ~~reed~~ plants reaching surface from bottom (max. about 5' deep). Nesting islands of coots & grebes present. Lake about 1 km. diameter in flat dry country. Cattle graze on water plants & local people fish with dip nets. No boats.

August 6, 1952 ^{3 mi. SW} Nr. Juliaca, Dpto. Puno
With Duffies truck moved trailer to near Chulliguani (sp?), Colegio of the 7th day adventists. Camped near rolling low hills & near barley field being cut. Zonotrichia, Agelaius, Synonotia, Nathura, Buteo, Falco sparverius, Phalacrocorax, a ground sparrow (♂ gray) with white spots in center each tail feather, Condalia, Guiraca caesia & Akodon jelskii in stone & adobe walls, Ptiloscelus. Much rocks but no lizards seen.

August 7, 1952. Hunted 7:30 - 9 a.m. & shot 2 Cavia & 4 Nathura (2 skins + 1 skeleton). Sunrise 6 a.m. Clear & sunny but clouding up; overcast, windy, & cold in late afternoon.

August 8, 1952. Friday. Hunted Nathura 7-9 a.m.; saw 2 & killed one. Overcast calm morning. Set 14 traps in thick grass on slope where many mouse droppings. Shot one imm. Cavia & saw 5 ± 7-9 a.m. Cold & overcast p.m.

August 9, 1952. Traps held 7 P. pictus, 3 A. boliviensis. Put up 2 ♀ P. p. & demanded other mice. Shot 3 Nathura & saw 3 others 7:30 - 9:30 a.m. Clear early morning; ice & frost; clouding up midday. Shot 3 Nathura in afternoon. Set 10 snap traps ^{at} foot adobe wall.

Journal

August ¹⁰~~8~~, 1952 Peru
 3 mi. SW Juliaca, Depto. Puno
 Traps held: P. pictus. Went to Juliaca & by bicycle to
 Laguna Ocampo & shot a Centropomus. at least 100 others,
 singles, pairs, & groups to 9, mostly among water plants
 reaching to surface. No nests or juvs. seen. A smaller
 gray & white black-headed grebe present. Fulica build-
 ing plant islands; some coots sitting & some Larus too
 sitting on ^{plant} islands. Some of these islands 1 foot above water
 surface. Flocks 20± sandpipers (Erolia?) seen. Most
 bottom too deep mud for wading. Returned to camp.

August ¹¹~~10~~, 1952. Looked for tinamous 7:30-9:30 a.m.
 & flushed at least 5 individuals (Nothura). Local people
 say ^{a gun} ~~several~~ caught in rocks nearly last year. Clear calm
 morning, breeze starting about 10 a.m. I saw mounted skin
 at the Colegio. Taken last December, an adult ♂. A ♀ said to
 have been taken same time & place (cemetery with rock wall-
 stop rocky-grassy hill).

August 12, 1952

To Puno & back

Went to Puno via truck to get signatures on ser papers.

August 13, 1952.

3 mi. SW Juliaca

Have 1/2 hr. talk to students & teachers at Colegio
 adventista del ^{de} Titicaca. Set 5 steel traps baited with
Cavia bodies.

August 14, 1952 Nothing in traps. Looked for Nothura
 8-10 a.m. & flushed 3. No lizards seen. Aug. 11 a boy
 brought a Gymnopsalia shot with slingshot & 2 white
 eggs from nest of same. I saw 2 of these birds
 fighting on road.

Journal

Peru

August 15, 1952. Saturday 3 mi. SW Juliaca Dpto. Puno,
Hunted Natura Nothura 1½ hrs. Took up steel traps.
Set 20 snap traps on hill near cliffs + dry bunch grass.

August 16, 1952. Traps held 2 imm. P. darwini.
Went to Juliaca. Caught 5 Liolaemus. Less than
1/10 clouds all day today with fair breezes.

August 17, 1952. Sunday. Traps (20) held: P. pictus,
2 A. boliviensis, 3 P. darwini; discarded all + left
traps out. By bicycle to Juliaca + the lagoon at Ocum
pate. Shot 8 Centropelma + 1 other grabe. 15 small
balsas taken to this lagoon this morning on mules +
horses. These paddled kayak-fashion by men on
their knees using a pole for paddle. They made
a line + drove geese into shallows at edge
lake + caught many with wooden balsas as
coots flew thru line of boats. Men wading assist-
ed. About 70 coots taken, ^{9-12 a.m.} perhaps 1/3 being
half to 3/4 grown young of this year. Many
still on nest islands of water plants. This is
Fulvia gigantea. Less than 1/2 coots on lake taken
perhaps only 1/3. This "chaco" said to be held
yearly. Coots called "joyas". Centropelma
called "pocco". Returned to Chullunguisani.

August 18, 1952. The 20 traps held 2 A. boliviensis,
2 P. darwini. Put up 1 darwini; discarded others.
Last 2 nights warmer than previous 2 + less frosty, but
thin ice formed. Aug. 16-17 night "warm" but clear.
To Juliaca + back. Picked up traps.

Journal

August 19, 1952

3 mi. SW Juliaca, Dpto. Puno

Hunted 7:30-10 a.m. Shot 2 Perthura, caught a lizard & snake. $\frac{1}{2}$ cumulus clouds by 10:30 a.m.

August 20, 1952.

To Puno

Secured repaired car and drove with trailer to Puno. Clear this morning - clear but grew cold, to freezing at times.

August 21, 1952

To nr. Mazocruz, Dpto. Puno

Drove from Puno to Ilave, then on Tacna road to near Heda. Payrumani. Set no traps.

August 22, 1952

To nr. Challapalca, Dpto. Puno

Drove toward Tacna & camped near a bridge at end of pampa, [km. 175 from Tacna] a few miles short of Challapalca control station. Set 20 snap traps in rocks near grass & tola. Saw no rheas tho said to be on the pampa. 100+ vicuñas on pampa, mixed with alpacas & also in scattered tola on gentle slopes.

August 23, 1952.

To nr. Tarata, Dpto. Tacna

Traps held 3 A. jelskii, 2 P. sublimis, 1 P. boliviensis (?). Many put up 2 jelskii; 1 a sublimis & boliviensis. Drove on slowly past Challapalca. Said to be rheas nearby. Summit of road km. 133 from Tacna. Much yarita between Livina & 133. Road rose to 15500' at Livina, about 15300 at 133. Then descended only 500' in next 8 miles, then down long gentle switchbacks. We camped at 13000' near km. 110. This in belt of scattered Polylexis about 6' high, 60+ shrubs reaching knee height, & many rocks. Grassy slopes with Polylexis bushes across canyons. Aspect of area & road like descending

Journal

August 23, 1952 To about 8 mi. NE Tarata, 13000', Dpto. Tacna to Arequipa. Set 20 traps near rocks & Glycyptis. Clear all day today, & usually windy.

August 24, 1952 To nr. Tacna, Dpto. Tacna. Traps held 2 Akodon (berlepschii?), 1 P. darwini, & soft furred Phyllotis. Clear & windy. We drove to Tarata & ~~on to Tacna~~ camped below it. Tarata has bushes, alfalfa on terraces, & appearance like Piquis area - hilly, cultivated, with variety of plants, at about 10000'. Parakeets and ^{many} other birds in near Tarata & another town a few miles toward Tacna. Then road ascended to 11500', then down in dry desert country. August 25, 1952. Tacna

Drove on to near Tacna & camped near edge of town. Tacna in a wide flat-bottomed canyon with considerable greenery though surrounding area is sandy desert. The Chilean consul, Luis Morand Dumas, spoke English & was very hospitable; it took but a few minutes to get visas. With this, the Inspeccion de Extranjeria did not hesitate in giving us our cedula de salida. All this at no cost. Camped at edge town; packed specimens for shipping to Mrs. Heller at Arequipa. Heard bats in night.

August 26, 1952 To nr. Arica, Chile Completed packing specimens & shipped them by air to Mrs. Heller. In mid afternoon we headed for border. Getting a Control de Pasajeros paper

Entered
Chile

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August 26, 1952

Arica, Chile

delayed us an hour. No inspection or bother then, only stopping at 2 controls for a few minutes. Chilean officials took $\frac{1}{2}$ hr. to write in their books & take a glance in trailer. The auto carnet worked fine with no delays. Camped on outskirts of Arica.

August 27, 1952

Arica to Camarones, Chile

In Arica changed money at 128 to 1 at a travel office. Banker didn't want it. Had to get a manifesto from Aduana - this took only a few minutes & no inspection. Saw 8 condors on a guano island $\frac{1}{4}$ mile in front of the Pacific Hotel. People friendly and town interesting. A truckload of swordfish (alfacora) seen. We drove S. about 50 km. to ^{Chaca} Chaca. Here they looked at papers & gave superficial look in trailer, there even being of the "caribeneros" & not the customs. A note from the Chilean consul in Tacna may have helped in all these border dealings. We ascended out of quebrada to Pampa Camarones & camped. These wide deep quebradas require a lot of time to descend & ascend. Some greenery & thorny bushy 15' trees in Chaca area. Pampas sandy & rocky & vegetationless.

August 28, 1952

Mary with hepatitis so going slowly. On into Camarones quebrada. Road ascends near

Journal

Chile

August 28, 1952

To nr. Zapiga, Prov. ^{Tarapacá} ~~Ata~~

clear stream for several miles, passing carabenera station at Chaca Cuya. Brake main leaf of a spring of trailer and delayed while waiting this use for travel. Camped near river Tana before reaching Zapiga. Road to Caritaya, 113 km. inland from Carretera Panamericana, takes off at edge campos N. of Tana river. This again a clear small stream.

August 29, 1952

To Iquique, ^{Prov.} ~~Ata~~ Tarapacá

A control at Zapiga, ^a ~~the~~ small town in salitre desert, but roads better from here S. & often paved. On to Iquique, turning toward coast from the salitre oficina of Humberto (50 km. N. to S.). A control at top of hill before descending 500± ft. to the coastal plain. Iquique on a point where this plain about 2 miles wide; only a few hundred yards wide in some sections. Stayed at Prat Hotel, parking trailer in enclosed yard. The town looks British & 1890's ish, not Spanish. Rather industrial & smoky. Many horse drawn vehicles. Many people English appearing but Spanish speaking. English ready gabled architecture. Most buildings wood. Handle-bar mustaches. Hotel modern with good food & more expensive than in Peru. As in Peru, 20% added to bill for tax & propina. Swordfishing here too, but off the streams of seabirds a few hundred yards offshore (as in Arica) absent.

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August 30, 1952

Iquique, Chile

Spent most of day in Iquique. Phoned Mann in Santiago; he said he would come up about Sept. 10.

Chilean canned goods cheaper than imported kinds in Peru & not bad. Imported canned goods very scarce. We left trailer at hotel & set out for Antofagasta in jeep, camping before reaching Humboldtia. Time here is 1 hr. ahead of Peru - so sun rises ^{& sets} late.

August 31, 1952

To Tocopilla, Prov. Antofagasta

Drove over pampa & rolling country, past many salitre oficinas, to near Tocopilla. A control at Quillagua. Thorny trees to 30' tall & cultivation on flood plain of Rio Loa.

September 1, 1952

To Antofagasta, Chile

Drove down coast to Antofagasta. Coast mostly rocky. Saw a cordón 100 km. N. of Antofagasta. Long sandy beach near Mejillones. Last 80 km. of road well paved, smooth, & straight. Stayed at a hotel, in m. being still sick.

September 2, 1952

To ^{nr. Calama,} Chiguicamata, Prov. Antofagasta

Stopped some. Town like Iquique but larger. Ships in harbor. No modern hotels but a huge one building. a saltpeter & copper town. Drove to near Calama road often excellent & paved, again rough corduroy. Terrain rocky & sandy desert. Cold at night & very windy by day.

September 3, 1952

Drove on to Calama & Chiguicamata, a huge

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September 3, 1952 Nr. Chuquicamata, Prov. Antof.
 copper mine (open terrace type) with refining
 plant, railroads, & small associated town. At
 the general office was an American in charge, & the
 chief engineer was William Rudolph. R. was old-
 timer there & interested in the country. He gave
 me maps & recommended three areas - one near
 Cerro Inca, one near Inacaliri (source of Chugui
 water), one near Volcán Putana, & all at the Boliv-
 ian border - for vicuñas, rheas, & perdices. Chugui
 would be a good base because of Americans &
 facilities there, & trucks, roads, hospital. A captive
 ree in a yard by hospital. We departed in after-
 noon & drove to near the San Pedro station, thence
 eastward to Ojos de San Pedro (warm springs), &
 camped. Volcans Cerros of San Pedro & San Pablo
 prominent. Roads dirt but good enough. Low
 bushes & grass clumps, but of kinds not famil-
 iar to us from Peru, above 11500'. Ojos about 12500'.
 a clear stream toward San Pedro from there. Windy
 all night from W., & all day too.

September 4, 1952 E. of San Pedro
 Ojos about 13 mi. from San Pedro, S.P. 35 mi. from
 Chuqui. We drove east on road N. of Ojos to
 Pampa Perdices & near Cerro Inca. Road thru
 bunch grass up long slope. Saw groups 5 rheas
 at 14500' (first summit), & 5 vicuñas. Many
 tussock workings too at this level. A second

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September 4, 1952 E. of ^{Est.} San Pedro, Dpto. Antofagasta
 pass at 15000'; then road dropped 300' to rocky
 pampa. Yareta, tola, & boulders on slopes, &
 muscachas in rocks - a long haired brownish
 one. Probably Tinamotis here too. Hard wind all day.
 This spot about 20 miles from Ojos. We went back
 to Ojos, seeing a group of 20 vicuñas + one ^{shea} vicuña
 on the way. Then took Toconce road about 16 miles
 east (a good rather flat dirt road much used
 by sulphur miners). Turned off at a sign
 saying Siloli, crossed clear small stream, & ascend-
 ed to head of water line at 14500'. Water there,
 rocks, bunch grass, & perhaps a good place
 to camp & study. Better road than Cero Inca &
 O.J. without water (snow, ^{patchy} tho). Strong wind. We
 descended to near Ojos and camped in a hut.

September 5, 1952 To nr. Quillagua, N. Antofagasta
 We returned to Chugui. (Dr Eric Nielsen in San Pedro
 mentioned for reference). Rudolph aut. Still strong windy.
 We took Tacopilla road - narrow but paved. It
 ascended to a summit, then descended in a straight
 road to the west. Turned N. and camped on pampa
 near Quillagua. In lower country said to be
 dangerous to camp near rocks, ^{or in rock houses} because of
 Chagas disease.

September 6, 1952 To Iquique, Prov. Tarapaca
 Drove on to Iquique, about 6 hrs. from Quillagua
 & ~~sch~~ stayed at hotel.

Journal

September 7, 1952 To Playa Blanca, nr. Iquique, P. Tarapacá
 Moved trailer to Playa Blanca, about 15 km. S. of
 Iquique on the coast. Two parties told me there
 were cormorants here on the coast, mainly at Tapiche
 (sp.?), about 75 km.^{S.} from Iquique, where there were
 guaneras. The ornithologist Bird said to have camp-
 ed near here for 2 weeks in 1940.

September 8, 1952

Playa Blanca

Pelicans & black backed large gulls common, a
 gray & white tern, dowitcher (?) which flies with
 loud whistling cries, small plover, Cendodes
 on rocks at edge waves, also Liolaemus next to
 water, occasional strings of cormorants, many
 turkey vultures. In retrospect, both turkey & black
 vultures over beach at Arica. 20 turkey vultures
 in a group near Humboldt Sept. 6. Several ten-
 nels in banks near beach at Cobija, S. of ^{Toco-}~~Toco-~~
 pilla. Some say there are bats in caves near
 Pisagua. Flocks 50+ of the small gold-shoulder doves
 near Ojos de San Pedro. Caracaras occasionally
 seen on beach between Tocopilla & Antofagasta. Hudson-
 ian ^{Curlew} ~~Curlew~~ common here; a small tern also present.

September 14, 1952

Playa Blanca

In evening Dr. Man & 3 or 4 companions arrived in
 a sort of German jeep with a Higgins trailer.
 They had driven long hours for 6 days, the vehicle
 being low powered & slow. This year, for the
 first time, there was a govt. appropriation for

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September 14, 1952 Playa Blanca, nr. Iquique, Peru
zoological work - $1\frac{1}{2}$ million pesos (\$12,000±).

September 15 Odd shopping in Iquique. Mann says he has shot 2 Oreoluma, one slightly north of Caritaya; a research station is being started at Tranque de Caritaya; there are some old buildings which might be made habitable. Northernmost forests in Chile said to be at Ovalle.

September 16, 1952 Mann's group went 100 km. down coast to Pabellón de Roca & got 8 of many Desmoades in a cave. Yesterday we looked in an old cave at Renta Isoda, near the high tide mark, where Arden Nielsen, Danish druggist of Iquique, once found Desmoades (he showed us one in alcohol). Mann has taken only 5 or 6, formerly only near Cuya (mouth Camarones River). He says there are Tadarida at Arica. On a previous trip they saw many caracaras going to Pabellón de Roca - this time only 1. Several people have told me that Pta. Patache is good caracara spot. Got radiator repairs in Iquique, and met Harold Gilmore ^(American) (spell?) & F.H. Hamblestone (English) of the Sea Beliterra.

September 17 To Rio Tana, Depto. Tarapacá
Mann's group to Iquique for repairs & supplies. Our family, with trailer, drove via Hamblestone & Zapiga to turnoff to Caritaya (13 km. ^{in from} ~~along~~ the road to Arica) and camped. Some farming and pepper trees & large thorn bushes in Trinitario & Tana quebradas, both only 200 yds. wide at bottom but with flowing clear stream.

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September 18, 1952

Dpto. Tarapacá, CHILE
To Caritaya, 12000 ft.,

We drove on to Caritaya. Road poor & narrow. about 70 miles from road to Arica. Some shrubs at 7500 ft. - much lower than in Chuquibambilla area. at La Alta Camina a fork descended to ^{the} cultivated bottom of a quebrada. Tall tota of 3 or 4 species (4' high) on slope at 12500 ft. Another fork descended to a stream. Highest point 13300' from which road descended to a 3 mile wide rocky pampa with yellow-flowered totabont 1' high & occasional clumps cactus. A dam here & km. long lake. Buildings with 1 family & 3 carabineros here.

September 19, 1952

Caritaya

The university has acquired 3+ living buildings here & Mann hopes to get people to come here & study. Unfortunately the place is 1-2 miles from the hills & there are no side roads. Mann ^[said he] took one Oreochromis (shad) about 3 hrs. ride to N. They have taken Alrocoma cinerea, Oxotomomys, and Chinchilla on a rocky hill 1 km. S. of buildings. Mann said he once took 5 young Tinamotis on the road nearby. Vicuña ^{& other} said to be nearby - tho we saw none. A smaller tinaman (than Tinamotis) said to be found a few hours away by mule. Conopsea re & Chaetophrastus (digo holes at base tota on ^{pampa} ~~pampa~~) said by Mann to be here. Huemul at Esquina about 3^{1/2} hrs by mule. Flamingos here but not now. Windy after 9:30 a.m. A few llamas in vicinity. at a village (at base of a nevado) 4 hrs. by mule from

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September 19, 1952 Caritaya, 12000', Dpto Tarapacá, (CHILE)
Caritaya, an Oreolum ^{= F. jacobina} said to be embalmed in a church.
a black & white quail, a. flavirostris & crustata on
the reservoir. Set 43 snap traps ~~near~~ rock slopes
near tola & clumps grass. Mann's group went back to
tall tola area & set 70± traps. Overcast today.

September 20, 1952. My traps held 3 Akodon
berlepschii, ~~and~~, & long-furred Phyllotis (serwini?), &
1 paler Phyllotis, ^(same kind?) all but 3 taken in the half
of traps set in canyon below dam. Mann's
group took nothing. I saw Phryganea plebeja, Rhaco-
baenus, Ptilopsis, spine tails, Cinclodes, Upucurthia,
Patagona gigas, 1 Kultur, & other birds. Mann's group
left for Santiago. I have the hepatitis (from which
Mary has just recovered after 3 weeks) so taking it
very easy. Clear & bright & windy today.

September 21, 1952 My traps held 4 Phyllotis
& 1 Ak. berlepschii (specimen). (Set 3 Phy. in formalin
for Mann. We moved back road about 2 1/2 miles
& went 1/2 mile E. to stream entering the tangle. Set
20 snap traps near rocks & tola.

September 22, 1952. Traps held 4 ♀♀ 5 ♂♂ of same
Phyllotis. Many prep. 1 ♀; others discarded. Water here tastes
of minerals. We drove about 20 miles toward Camiño
& camped on gentle rocky & tola slope. Clear & windy
today. Mary set 10 traps near rocks & tola. Shot
3 of many viscacha seen on in a group of rocks
about 1 mile down on Caritaya side of divide. All 3 were

Journal -
Chile

September 22, 1952 Nr. Caritaya, Prov. Tarapacá, Chile
 ♂♂ with large (20x30) testes + turgid sem. ves. Streaks
 of snow on peaks above 15000'. About 40 miles to NE
 some solidly snowcapped peaks.

September 23, 1952 Nothing in traps. Continued on
 toward Yagaja. Saw 4 cardos ^{in groups} near Alta Camina.
 A common large lizard at 11000 ft. + below seems
 to be other than Liolaemus multiformis. Camped
 near Tara River. Saw several small bats over ^{green} ~~green~~
 vegetation + stream in evening.

September 24, 1952 TO Iquique, Prov. Tarapacá
 Drove on to Iquique and camped about 10 km.
 S. of town.

September 27, 1952 LV. Iquique
 In late afternoon departed for Chuquicamata +
 camped near Humboldt in trailer.

September 28, 1952 TO Quilagua, Prov. Antofagasta
 Drove on to the horn-tree shallow quebrada of
 Rio Loa + camped about 4 p.m. Looked for
 bats in evening but saw only 1. Swift clear stream.

September 29, 1952 TO Chuquicamata, Prov. Antof.
 Drove on to near Maria Elena + took road to
 Chuquicamata, arriving late afternoon. Briefly
 visited W.E. Rudolph, chief engineer. Camped nearby.

September 30, 1952 Chuquicamata
 There Mr. Rudolph was able to buy groceries
 at Chile Exploration Co. (Chilex) pulperia - many
 items imported from U.S. and all much cheap-

29 traps

Chile

Chugucanota, Prov. Antof.

October 1, 1952 To Qjos de San Pedro, nr. Chuquicamata
with family & trailer drove to Est. San Pedro. Eric
Neilson, who has ~~gas~~ gaseta business there & facil-
ities for repairing trucks, was friendly & will sell
us gasoline & some supplies when needed. We drove
on to near Qjos de San Pedro & I set ²⁹~~30~~ traps near
tola (mostly cedar-leaved kind to 1' tall; ^(another) some to 4')
and rocks. Thick grass near stream but no sign
in it. Salty deposits at banks of clear fast stream
and great growth water plants in stream. Neilson
said there were guanacos to west of the river at
Est. San Pedro. He recommended pampa near Putana
for ostriches, perdices, vicuñas. Wind strong after 1 p.m.
and clear all day. Rudolph came by after a trip
to Qjos Acatan & said he saw tinamous & vicuñas.

E. of Est. San Pedro

The traps had 2 small Akodon by 6 p.m. In morning 12 more mice; of the 14, 7⁶ small Akodon, 1 Hesperomys, 5 medium Phyllotis, 1 large Phyllotis with rather short tail, 1 Eligmodontia ~~Hesperomys~~-like. We departed Ojas about 1 p.m. Anas, Anas flavinactis, many small ducks, & other birds there. From the ^{actual} ~~new~~ source of the water (Ojas) we drove toward Tocum. 6 miles

Chlex Club

Carlos Bronda, gerente

Polperia

Ted Morton, mgr.

Macfadyen, Eric A.

Travel-money

Chuqui.

Journal

October 2, 1952 Prov. Antof., Chile
 To nr. Toconce, 60 mi. ENE Calama,
 out saw on rhea. 13 mi. to Saloli road. 17½ miles to
 road to Calama (sulphur digging). 35 mi. to Toconce ^{quebrada}
 road & we camped near it. Saw a vicuña near 17½
 + 25 miles, a rhea near 25. Many *Tiarnatis* tracks at
 road near head of the Toconce quebrada. Long gentle
 bunch grass (brown) slopes, some tola & yarita &
 rocks, & slopes reaching to precipitous bare volcanic
 peaks to east. Some snow on peaks - old appearing.
 Many side roads & main road very good tho cordier
 aged. Yarita & sulphur trucks use these roads.
 Toconce has dam & is source potable water for Chiguí.
 Many mouse tracks in sand among rocks. I set 30
 traps on sandy slope near rocks, yarita, tola. Wind
 strong in afternoon.

October 3, 1952 To nr. Putana
 Clear calm freezing night. Traps held 2 *Phyllotis*
darwini (?) (1 spec., discarded), 2 *Akodon andinum* (disc-
 arded - to Mann in formalin), 1 *Phyllotis sublimis*. About
 noon we drove on toward Putana (S.). Road good dirt
 & used daily by sulphur & yarita trucks. 31 miles
 from Ojar S.P. a clear small stream (Toconce drainage probably).
 Then much ascent to a pass at 14800', 37.1 mi. from Ojar.
 Then descent to the keyser of Tatio, 14000', 45 mi. from
 Ojar. A pampa about 2 miles long here with 20+ boiling
 and spurting water holes. Saw 2 huallatas & 2 cordill-
 era ducks here & many *Tiarnatis* tracks. Some
 llamas also in vicinity. Spring bunch grass, short

Journal

October 3, 1952 Prov. Antof., Chile
 Nr. Volcan Putana, 66 mi. E. Calama,
 tala, & the red brown rocks of volcanic peaks rising
 a few miles to eastward. 3.3 miles from where road reach-
 ed geysers, a clear small stream crossed, with road branch-
 ing off to east (to sulphur or yarita probably). 7.2 miles from
 geysers a sandy area with many Tinamotis tracks.
 7.8 miles from geysers a high point in road at 14400.
 There ~~was road to~~ ^{main road} went straight toward a sulphur plant on
^{vast} large rocky pampa, & we took a slightly poorer left
 branch. Many Tinamotis tracks here. On this road we
 went 7.6 miles, crossing one small stream en route, &
 camped by a clear stream 2-3 yds. wide. Road led over
 bunch grass & rocky pampa. Saw occasional free rills,
 probably of vicuñas, & saw 2 Tinamotis near camp. ^{14500'} I
 set 24 snap traps in rocks near stream. Much viscacha
 sign here. Putana prominent about 5 miles to S., & another
 peak to SE at about same distance was smoking. Strong
 wind in afternoon. 1/2 overcast in afternoon.

October 4, 1952

Clear freezing night; calm into morning. Traps held, P. darwini.
 Hunted Tinamotis 1 hour & saw 1. Heard Attagis alarm
 call (flight). Principal grass a yellowish spiny bunch
 grass (Festuca?), to 1' high. A fine curly bunch grass near
 rocks & stream (to 6" high). A kind of Utricularia & 2 or 3 kinds
 tota near stream, to 1' tall. Drove on to west base of
 volcano Putana (14800'; 70 mi. from Ojos San Pedro). Yarita
 being loaded into trucks there. Returned to camp, then
 with trailer back to Tatis geysers. Camped. Set 30 snap traps.

Journal

October 5, 1952 Prov. Antof., Chile
 Tatio Geysers, 57 mi. E. by N. Calama, 1
 Traps held 2 Abodon andensis (discarded). Searched for Ti-
amotis & found hundreds tracks but no birds. Much vis-
 cacha sign but none seen. Calm until about 9 a.m., then strong
 wind. Saw tracks & rheas. Saw 2 smaller ducks. In
 afternoon we drove back to the stream above Toconce &
 camped in area rocks, sand, tola, & bunch grass.

October 6, 1952 Nr. Toconce, 60 mi. ENE Calama, 14000'
 Freezing calm clear night. Saw 3 Tiuramotis near camp. We
 drove back to Ojos San Pedro (30 mi.), thence about 12 mi.
 up road toward Pampa Perdida, looking for vicuñas,
 rheas, & tinamous. Saw 1 rhea & 1 vicuña & many tracks.
 Very little travel on this road. Returned to Est. San Pedro
 for gasoline, then back to trailer at Toconce. From Est.
 San Pedro, about 17 mi. to Ojos, & 7 to camp. Strong wind
 from W. from 9 a.m. on.

October 7, 1952 Nr. Toconce, 14000'
 Clear calm freezing night. I searched hills E. of road for
 3 hours but saw only 1 group (3) tinamous. Found tracks
 1 rhea & many foxes. Hundreds of Ctenomys burrows in
 some areas but few showed fresh workings. Set 32
 snap traps, 2 steel traps, 4 Macabee traps, near rocks, grass,
 tola in bottom quebrada.

October 8, 1952 Traps held 5 Phyllotis darwini, 2 Ab-
odon andensis, 1 Abrocoma cinerea (steel trap at mouth round
 burrow with ^{loose} tailing pile of fine soil). Spent 2 hrs. looking
 for Tiuramotis & found nest with 12 eggs. No wind
 this morning; breeze by 10:30 a.m. Clear. Min. temp. -7°C. Set

Journal

- October 8, 1952 CHILE
Tocane, 60 mi. ENE Calama, Prov. Antofagasta,
 3 steel traps for Ctenomys; got one by 6 p.m. Fair wind in afternoon
 but not too strong - calmest day we have experienced in this area.
- October 9, 1952 Min. temp. - 4°C . Calm clear night & calm
 morning. At 7 a.m. I to car parked near Tinamotis nest and
^{+ 1:55 - 4:10 p.m.} showed nest to 10:10, still stretches of old snow ^{s. side of} on peaks in area.
 2 tucos taken today. Traps held 2 P. darwini. I took
 up 10 snap traps & set 35 others in sand, talus, &
 rocks. Clear clouds & cold wind by 1 p.m., much
 overcast in afternoon. Found apparent signs of Octodon
omys (many droppings under large boulders). ^{Max. temp.} + $11\frac{1}{2}^{\circ}\text{C}$.
- October 10, 1952 Min. temp. - $5\frac{1}{2}^{\circ}\text{C}$. (Ground level
 under trailer). Traps held 4 Akodon andinum,
 2 P. darwini, 2 Eleginodontia, ^{old} traps line with
 nothing so all traps taken up ^{only} same 2 steel traps
 near Abrocoma lurrani. Clear, & fair breeze by
 10 a.m. Mary followed tinaman tracks about 4
 hrs. today; many tracks but no nest found. Drove to
 Tocane Springs (2 km. W. of camp) where there are
^{Max. temp. + $10\frac{1}{2}^{\circ}\text{C}$.} buildings & men associated with water intake for Chiguai.
- October 11, 1952. Traps held 4 Akodon andinum, 1
Rhyllotis sublimis. Took up all traps. Min. temp. - $6\frac{1}{2}^{\circ}\text{C}$;
~~was~~ Clear & calm in morning. Looked for tinaman
 tracks in afternoon. Set only 9 traps. Max. temp. + 10°C .
- October 12, 1952. Traps held 2 P. darwini, 1 Akodon andinum
 (all discarded). I followed tinaman tracks in morning,
 Mary in afternoon. Wind from S a.m., from W. Min.
 temp. - 9°C .

x^9 -6 18
 $x^{11}(2)$ -6 19

Journal

October 13, 1952 Bar. Antof., Chile
Toconce, 14000', 60 mi. ENE Calama,

Min. temp. $-10\frac{1}{2}^{\circ}\text{C}$. - coldest we have experienced here. Much Tinamotis calling & I searched for nests all morning. Followed ^{alroscaya (?)} tracks most of afternoon & set 10 traps. Little calm in early morning & max. of fair breeze (from W.) all day. Max. temp. $+11^{\circ}\text{C}$. Car out of order with valve(?) trouble.

October 14, 1952 Traps held 1 Ak. andersoni (discarded). max. temp. 14°C .
Min. temp. -4°C . - night clear & calm as previous one!

I walked 3 km. to Toconce Springs (15 km. E. Toconce) and phoned Chequi for mail & info. 3 steel traps ^{for mice} out.

October 15, 1952. Traps held 1 Phyllotis subulimus (to Mann coll.) Tracked Tinamotis & Alroscaya. Set 15 snap traps & 5 steel traps (for alroscaya). Min. temp. -3° , max. $+13\frac{1}{2}^{\circ}\text{C}$. Clear with mod. W. wind.

October 16, 1952. Min. temp. -5°C . More wind than yesterday. Caretaker at Toconce Springs, ^{at 14000'} there 2 yrs., says rarely snow here, but cloudy with occasional showers in Jan. - Feb. with solid snow on the peaks. Our locality probably better called Lingor, near SW base of that mountain. Snap traps held 2 P. darwini (discarded), & a small abroscaya (steel trap) kept alive. Thin cirrus clouds today. Walked Toconce Spr. & back. Awaited tow for car; it ^{came} ~~arrived~~ after dark so put it off until morning. Max. 13°C .

October 17, 1952. Min. temp. -4°C . 8/10 alto cumulus overcast & calm at 7 a.m., but soon windy. Got towed to San Pedro for car repairs. Worked on car. Stayed with Erik Nelson & family who were very hospitable. Max. temp. $+9^{\circ}\text{C}$ at Toconce.

Journal

Chile

October 18, 1952

Est. San Pedro, Prov. Antofagasta

Worked on car with local help; couldn't find trouble. Drove to an indian settlement SW of Pavi where terraces & crops (quinoa, alfalfa, wheat, corn) being planted, with Nelson. At a lake near Ojos de San Pedro (E. of the actual ojos) saw 9 flamingoes, 2 much paler than others, & 6± avocets. A fisherman from Chuqui took 7 rainbow trout about 12" from stream about 3 km. below the ojos. at our longer camp min. temp. -6°C . last night.

October 19, 1952

(= former Toconoma in notes)
 Lin 2071, 14000', Prov. Antofagasta, Chile

On a truck returned to camp early this Sunday morning. An Abrocoma ♂ in a steel trap; kept alive. Min. temp. -6°C . last night. Max. temp. yesterday & today $+11^{\circ}\text{C}$. Walked to Toconoma Spr. to phone & found phone out of order. Collected one egg from Tinamotis nest when bird off. The yesta luncheon at San Pedro run by Miguel Urdangarín, & before by his father (possible source old time info).

October 20, 1952. Min. temp. -3°C . Calm with 3/10 high clouds at 10 a.m. 15 traps set yesterday yielded 1 Ab. andensis, 3 Phyllotis sublimis, 3 Phyllotis darwini, all in sandy area where rocks & talus dry. All discarded. I set 3 steel traps for tucos & left other traps out. Caught 2 tucos by 5 p.m. set 4 steel traps for Abrocoma. ^{max. temp. $+12^{\circ}$}

October 21, 1952. Min. temp. -2°C . Wind at night, and 8/10 overcast in morning, wind increasing in morning. ¹⁷ Snee traps held 3 Ab. andensis, 3 Phyllotis sublimis, 3 P. darwini. Steel traps held 1 ♀ Abrocoma (kept alive with 2 previous imm. ♂♂). Took up all traps. Went to Tinamotis nest at 8:30+

Journal

October 21, 1952. Linzor, 14000', 60 mi. ENE Calama, Chile
 set up pupa tent blind & watched. Good mouse catch last night
 prob. due warmth; second night these traps out. Clouds gone by
 10 a.m. Took Tinamotis eggs while adult off nest. Took eggs
 to San Pedro by truck.

October 22, 1952 Wed. ^{Temps. +1, +10, at Linzor.} With Erik Nelson toward Jupa to
 Chugui for repairs & left it. Stayed at Nelson's at San Pedro.

October 23, 1952 ^{Temps. -6, +12°C., Linzor.} Returned to camp with groceries
 with Erik & Miguel Urdangarin. Broken leg pair delay-
 ed us long at Calama sulphur plant.

October 24, 1952 ^{Temps. -4, +11°C., Linzor.} With Erik & Miguel visited end
 of road at Valon & pagoda, about 17000' and apparently
 above vegetation, mouse sign. Cold there even in sunshine
 & out of wind. We returned via Planta Tatio (sulphur)
 and geysers of Tatio to my Linzor camp. I with them
 then to San Pedro & spent night. Shot 2 adult Tinam-
otis this morning. Put up one (21666).

October 25, 1952 ^{Temps. -5, +11, Linzor.} Nelson's have 4 Patagonian in a cage
 where they look & act much like the shell parakeets common-
 ly kept in U.S. To Chugui with Miguel & got car.
 Returned to Linzor camp.

October 26, 1952 To Tatio Geysers 14000'
^{Temps. -6, +11° at Linzor.} Looked for Tinamotis nests all morning. Drove with
 trailer to Tatio Geysers. Set ~~30~~ 30 traps near
 boulders, tall, bunch grass. Clear & moderately windy.
 Along a stream here where many geysers empty
 water so warm & sulphurous (?), many frogs
 2-5 per yd. for 50 yds. along one edge where

Temper

~~22 am. +1 +10~~
~~3 -6 +12~~
~~4 -4 +11~~
~~5 -5 +11~~
~~6 -6 +11~~

8 -10
9 -11 +11

Journal

Chile

October 26, 1952 Tatio Geysers, 14000', Prov. Antof., green algal scum borders running 10' wide stream. (In morning 20/29 yd. same place).

October 27, 1952 Traps held 8 mice: 6 P. damianii (disc.), 1 Ak. and. (disc.), & 1 other Phyllotis (or 1670 CBK). Left traps out. Followed Tinamotis tracks most of day. Clear, fair wind.

October 28, 1952 Min. temp. -10°C . last night. Traps held 0 so taken up. Shot an A. flavirostris (20+ mm. testes) & a viscachas (test. 30+ mm.) for pat. Drove to Cerro Tatio looking for Tinamotis. Saw 9 downy young rheas, perhaps $1\frac{1}{2}$ K. each, which a man had taken alive on pampa near Cerro Tatio a few days ago. Near that site saw 3 rheas & killed one after chasing it over pampa in car. Returned to Tatio Geysers camp. Clear with mod. wind today; not cold.

October 29, 1952 Temp. -11° , $+11^{\circ}\text{C}$. Made skeleton of rhea. Drove to Toco to phone. Returned to geyser camp. We are leaving Antofagasta for Panama by plane Nov. 10 eve. Viscacha set from Huaylaco did not return after trip to nearby ^{rocks}.

October 30, 1952. Temp. -9° , $+12^{\circ}\text{C}$. Searched for Tinamotis nests. In afternoon drove to near Cerro Colorado, Planta Tatio, & back to camp looking for rheas & tinamoues. Got dead rhea chick from local man. Viscacha gone.

October 31, 1952 Temp. -11° , $+11^{\circ}\text{C}$. Fog over geyser area in early morning. Clear clouds during day. Looked for tinamoues & saw a trio. Hauled trailer about 2 miles toward ^{Cerro} Tatio & camped in good tinamou area. Set 15 snap traps near rocks, etc. Today took temperatures of frogs & water in which they swim near geysers. Water

Journal

October 31, 1952 Chile
 Tatio Geysers, 14000', Prov. Antof.,
 in small stream 38°C. Frogs ^(Bufo) swim in it but usually on mud
 at edge where temps. 27°C., or with only part body in water.
 Air temp. +8°C. at this time. Temperatures 8± frogs
 taken. Mostly 24-28°C. One, snatched from water, 32°C.
 Perhaps couldn't live long in the hot water. This water
 strong in minerals so nauseating to try to drink.

November 1, 1952 -6½°C. last night. Looked for
Tinamotis. Traps (15) held 5 Ak. andinum, 4 P. darwini,
 all discarded. Some old apparent Abrocoma tracks here. In
 afternoon drove on yanta road around E. side of
 geyser flat but saw no rheas or tinamous. Usual
 cold W. wind in afternoon. Occasional pair hualatas
 seen near geysers or stream entering from S.

November 2, 1952 ^{To nr. Cerro San Pedro} Sunday. Temp. -5½°C. Clear search-
 ed for tinamous & saw group of 1 ad., 8 or 9 juvs. ^{here.}
 Black tenebrionid (?) beetles common walking on surface.
 Drove with trailer to near Cerro San Pedro & camped.

November 3, 1952. at a salty muddy shallow isolated lagoon,
 about 100 X 300 yds. in size, saw up to 50 flamingoes (arrived
 8-9 a.m.), avocets (2 specimens), andean gull, Baird's sand-
 piper, andean plover, Lessonia. Set 10 snap & 2 steel traps near
 rocks & tals. ~~2~~ 1 mi. E. Cerro San Pedro 12500'

November 4, 1952. Temp. min. -8½°C. Wind in early night
 here; calm to about 10 a.m. Clouds & c-sts. overcast yester-
 day & today. Waited for flamingoes & saw 30+ but got
 none. Shot 1 gull (specimen). Drove to Est. San Pedro
 for supplies & returned to camp.

Journal

Chile

November 5, 1952 To Chuqui & back, Prov. Antof.,
 Drove to Chuqui, Calama, & return. Dined with M. Paul Cuen
 & family at Chuqui.

November 6, 1952. Ojos San Pedro, 12500', Prov. Antof.
 Drove to Pampa Perdida & back to Ojos; saw rheas & vicu-
 ñas.

November 7, 1952. Waited 7:30-9:30 in blind at pond for fla-
 mingoes but none came. Clear. Wind after 9 a.m. Shot 1
 avocet (♀ 1680). Drove looking for rheas & tinamous; saw
 none. Moved camp to 1 mile W. Ojos where 11 flamingoes.

November 8, 1952 moved trailer to Est. San Pedro.

Worked on packing for trip to Berkeley. Drove 36 mi. to
Salar de Ascotan & there shot 2 Rhoeniscoperus. Return-
 ed to Est. San Pedro. Flamingoes in early breeding con-
 dition. Perhaps many at Ojos Ascotan. Salar Ascotan
 about 6 x 10 miles of white salt rough pampa with
 occasional pools water.

November 9, 1952 To Antofagasta

Completed packing. Left trailer at Est. San Pedro.
 Drove to Chuqui for mail, Calama for de-
 parture papers, then to Antof., arriving 1 a.m. &
 staying at Hotel Mary - ancient & dirty, once
 probably considered luxurious.

November 10, 1952 Visited consul of U.S. Left
 car in Ford garage until return. Arranged
 with customs agent (Pizarro M.) to import
 my cars. Departed 9 p.m. on Panagra, El Recif-
 ico, for Panamá.

Journal

November 11, 1952

Canal Zone (Ancon)

Stayed at Twali Hotel after arrival this morning. Phoned Zetek & Sengor Lab. Trapido & Fairchild visited with us in afternoon. ♀ captive Abrocoma died in transit; a young ♂ survives - put in cool place by Trapido.

November 13, 1952 To Juan Mina Station, Chagres River

Trapido took us to Gamboa in Sengor Mem. Lab car. En route stopped at Summit Experimental Gardens & took several Eudermis of 50+ seen in groups 1-10 under fold of cut palm leaf. The fan-shaped leaf has the thick ribs cut about $\frac{1}{3}$ way from end, then end drops down forming a "tent" for the bats. The bats 3-15' from ground in palms 20' high where many people pass & beside a road. At Gamboa we were met at noon by Henry Van Horn, who works at E. M. L. station at Juan Mina, with a cayuco with outboard. A nice ride of $\frac{1}{2}$ hr. up the Chagres to the station. We were given a nice bungalow to stay in & do our housekeeping. Many birds calling. Parrots seen & heard. Rain on & off from noon on. In evening shot a Nyctihina & Nyctidromus by eyeshine in grapefruit orchard. The former in a tree & said by Van Horn to never be on ground. Nyctihina called "bohío" for its call. Saw Derias & Melospiza fly from the main house at edge water at station in early dusk. Van Horn showed ^{me a} speckled fish eating bat about 2x size Derias which he shot here recently. He said the

Journal

- November 13, 1952 ^{5 mi. NE Gamboa,} ~~Juan Mina Station, Canal Zone~~
 bat shot in early morning after heard from house. It
 made one pass at fish & apparently wounded it, then picked it
 up with hind feet & tail membrane on next pass. Van Horn is
 a good observer with $\pm 5 \pm$ years on the Chagres & knows the
 English names of most animals; speaks good English too.
- November 14, 1952 Van Horn took me hunting near & on
 waterways in boat. I shot a Chloroceryle, 2 Helminis,
 woodpecker, ^{and} ~~the~~ heron (described last?). Collected Dryas
 & Molossus [^] from attic of main house near river.
- November 15, 1952. With Henry in boat, hunted along
 waterways. Shot a 3 toed sloth in top of tree. 4 shots of
 shotgun at $40 \pm$ yds. necessary to bring it down. to skin
 & skeleton made. In evening hunted from boat with light &
 shot 2 Nyctehinus from trees along river, a small possum
 (21697), & another kind of possum which fell in river & was
 lost. Saw 2 other possums. Henry said Cochlearia encountered
 at night sometimes, along river banks.
- November 16, 1952. Walked in woods with Henry but
 shot only a frog. From boat shot woodpecker. Saw por-
 rats (3 sizes here) & toucans. Heard chachalacas, & me
 orchards at Juan Mina, tinamous (H. says very secretive).
 Collected 7 ♀ Uroderma yesterday from underside of a
 coconut palm leaf 15' above ground. Started to night
 hunt but rain interfered. Usually 3 or 4 showers a day,
 rather hard, lasting about $\frac{1}{2}$ hr. Most rain ^{at noon or} in afternoon.
 Facilities here very good for collecting birds but the
 parrots & deer have been shot out to great extent.

Journal

November 17, 1952

Ancon, Canal Zone

Went to Gamboa by boat; saw a few foot in route.
Spent day at Gorges Mem. Lab & Tivoli Hotel.

November 18, 1952.

Took El Pacifico from Tocumen airport 7 a.m. for Miami.

Arrived Miami 11:30. Customs took a peak in
only a few of my 9 pieces luggage & had ample time
to board 12:45 plane for Oakland. Arrived there 10:30
p.m. The Albacoma survived the trip.

1. Koford
1951

Journal
Weather data - to go with C. Koford journal.

Aug 7 8 mi. SSW Limbani, 15000', Dept. Puno, Peru
1:00 PM humidity ^[for prob. much off] 17%, temp. 8°C. Max. 9°,
min. -6°. Set [max. min. thermometer, Centigrade].

Sept. 16 max today 12°

Sept. 17 min. last nite -5°C. max today 15° C.

Sept 18 " -4½° " 12°

Sept 19 " -5½° " 13°

Feb 1, 1952 Huaylarco, Dept. Arequipa
min. last nite +1° max yesterday 11°

Feb 2 " -1° " 7°

Feb 3 " 0° " 8°

Feb 4 " +1° " 10°

Feb 5 " -1° " 7½°

Feb 6 " -2° " 10°

Feb 8 " 0° " 9°

Feb. 9 " -3° max. yesterday
or today 11°

Feb. 10 " 0° ~~max. yesterday~~ 7°

Feb 11 " 0° max. yesterday 10°

Feb 12 " 0° " 8°

Feb 13 " +1° " 11°

Feb 14 " +1° " 9°

Feb 15 " +2° " 9°

Feb. 22 " +1½° " 9½°

Feb. 24 min. last nite
or nite before +2° max. yesterday
or day before 10°

Feb. 25 min. last nite 0° max. yesterday 10°

26 " -½° " 12°

27 " -3° " 12°

28 " -5° " 12°

29 " -5° " 10°

M. Koford
1952

2

Journal

March 1	<u>Huaylarco</u> , 52 mi. ENE Arequipa, 15000'			
	min. last nite	-2° C	max. yesterday	11° C
March 2	"	-1°	"	12°
3	"	-4°	"	10½°
4	"	-3°	"	10°
5	"	-½°	"	10°
March 11	"	-½°	"	—
12	"	0°	"	12½°
April 5	"	-4°	"	4°
April 6	"	-2½°	—	—
7		-4		5
8		-5		11
9		-6		11
10		-4		11
11		-6		10
12		-5		13
13		-6		12
14		-5		9
15		-3		10
16		-4		9
17		-6		10
18		-5½		10½
<hr/>				
23	55 mi. ENE Arequipa, 15000'	-2		
24		-3		11
25		-2		10
26		-3		12
27		-3		11
28		-3		9
29		-3		10

M. Koford
1952

3

Journal

		55	15300'
	Huaylarco,	52 mi. ENE Arequipa,	15000'
		min. last night	max. yesterday
April 30		-2	+11
May 1		-3	11
2		-3	12
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1951

Journal South American Trips 1951-2

San Francisco, Calif., to Dallas, Texas.

~~Feb~~ February 20, 1951. Departed from San Francisco Airport on American Airlines flight 10, a DC-6, at 8:15 a.m. I was accompanied by wife Mary and children Raff (2½), Carla (1½), and Christi (3 months). Two youngest children rode free. Flew non-stop to Dallas, Texas. Excellent view of Mt. Whitney area, Lake Meade and Boulder Dam, and Grand Canyon. The extent of the Grand Canyon amazed me - everyone was tired of looking and photographing by the time we reached Canyon City. Arrived Dallas 3:45 p.m. central time. Stayed at Mayfair Hotel - quiet and inauspicious, but comfortable. Dallas to Panama City February 21, 1951. Boarded Braniff Airlines flight #03, a DC-4 tourist liner. Arrived at Houston 9:45. Secured Panamanian tourist cards and departed at noon. Flight over the gulf to Havana eventless. Havana area flat and cultivated with ~~the~~ partial rows of coco palms along edges of fields. Left after 45 minute stay and flew on to Tocumen Airport, ^(sp.?) ~~the~~ near Panama City, at arriving 10:30 p.m. Taxi 15 miles to town and put up at Hotel International. Letter from Zeteh awaiting me there. Panama

February 22, 1951. Called Zeteh and arranged to meet him at Tivoli Hotel. Alexander Wetmore had arrived there last night. Zeteh had commissary card and railroad pass for me. Moved family to the Tivoli Hotel. Pascoe Haining, a friend of Bob Hayes, phoned from Gamboa. He picked us up, drove us to

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Journal

February 22, 1951

Panama
Canal Zone

his place at Gamboa for lunch, and took us on a ride to the experimental gardens, Old Panama, and other places. Saw several turkey vultures at Gamboa but only black vultures at Old Panama. Mockingbirds, small ~~cinnamon~~ ^{cinnamon}-colored jays with gray heads, vermillion flycatchers (?), ~~mocking~~ birds, ^{grackles} ~~and some~~, some small blue birds, and others at Gamboa. Returned to Tivoli Hotel about 5 p.m. A few short but rather hard rain showers during the day. The story was that the recent rains were unprecedented (since 1915 or 1916) for this time of year (the dry season) in this area. Usually the country not nearly so green at this season. At the Tivoli I met Harold Trapido of the Gorgas Memorial Laboratory and talked with him about bats. Phyllostomids were common at Chillo-Girillo (sp.?) caves, now easily accessible by road, and he would take us there next Tuesday. There were leaf-cutting bats at the Experimental Gardens, Trapido said, and there was one genus of fish eating bats here. Malossus was common bat in the city buildings. Zeteh said we could take whatever bats we wished at Barro Colorado and also trap for small mammals. We take the 7:10 a.m. train from Panama City for Frijoles tomorrow morning, thence by boat to the island. Trapido said Sarcophages present here but not common.

To Barro Colorado Island, Canal Zone

February 23, 1951 Departed from Panama City on 7 a.m. train

Journal

February 23, 1951

Barro Colorado Island, Canal Zone

for Frijoles. About 8 a.m. arrived Frijoles. There met Mr. & Mrs. Masland ~~set~~ who were also visiting Barro Colorado. Masland from Carlisle, Pennsylvania. Our family stayed at a 3 bed green wooden house at a lower level than laboratory. I went with Masland and his wife for a tour of some trails guided by Gregorio, a dark boy who spoke only Spanish. We saw about 3 "conejos" (^{agoutis} ~~carybara~~?), a small deer, white-faced monkeys, a hawk (Buteo), and a few birds (too poorly seen to identify). A man named Claudio accompanied us part of the way; he was collecting fruits to look for fruit flies. The yellow-flowered ceiba in bloom. Saw one reefous mot-mot. Returned to laboratory for lunch. Upon arrival at our house we saw about 6 bats, apparently ^{Saccopteryx} ~~fruit eating~~ bats with short tails, on the screens. These lively and we could not catch them. By the time we unpacked our net, these were gone. Found about 20 Myotis under eaves on south side of Kodak building. These seemed to be all ♀♀'s - took a few. Under eaves on the stucco Betch house and Thomas Barbour house, there were males alone alongside the 2"x4" rafters. Took a walk to the Tower with Mary in the afternoon. We saw an anteater climb a tree and ascend very slender stalks. Its claws were long and tail somewhat prehensile. Also glimpsed a peccary and a yellow breasted trogon (Trogonurus?). Saw a red headed manakin with black body in dark forest, low down. At noon two tapirs came to kitchen area and were so tame that the children fondled them and sat on them. One deer (Odocoileus) was only slightly less tame. ~~See Tapirs~~

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February 23, 1951

Barro Colorado Island, Canal Zone

were called "macho monte" by the people here. Coatis ("gato solo") common. Several came for bread on lawn and retrieved bananas and bread ^{hung} from a clothesline for their benefit. I set 20 snaptraps, baiting with bread ~~and~~ ^{or} banana, along a small stream and the Snyder-Molina trail. Hung a banana in one house and left door open as a trap for fruit eating bats. About 9 p.m. found 2 bats in the house and the banana partly eaten. Caught 1 bat (when Mary opened it next day to skin it next morning, banana mush came from bursting - full stomach). Caught 1 Mall Molossus (of group of 3) under eaves of Kodak house. Heard much chirping under eaves of tech house and cook house as if many under corrugated iron of roof. A young "mono negro" kept in cage in dining hall and a "conejo pintado" in another cage. The howler showed no eyeshine at night, the conejo a red eyeshine. A large brown Rana (?) in creek, size of bullfrog, had bright pink eyeshine. Coati eyeshine green or yellow. Several snaptraps sprung (by insects?) but no catch by 9 p.m. White-faced monkeys (2) seen in morning near Snyder-Molina trail.

February 24, 1951. Saw large Amazilia and Rhamphastos swainsonii near Snyder-Molina trail. After breakfast Mary & I put up bats as specimens. The ~~fruit~~ bats did not return to screens of house. "Chechi" Vitola told us there were bats in attic of the Frank Chapman house. We looked. About 100 Myotis nigricans, mostly ♀♀, there, in clusters of 10 to 20 just inside eaves. Several at ends of ridge pole. Took 1 Mall Molossus and saw another with the Myotis. A group



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February 24, 1951

Barro Colorado Island, Canal Zone


of about 15 visitors, mostly ♀♀'s, here with Betty today. No catch in snaptraps. Visited a hollow tree on Arman trail and shot up into it but discovered no bats there. Saw another rufous mat-mat. Tail swinging side to side about 30° with a quick ^{motion,} ~~motion~~ stopping at end of swing. Occasionally tail raised dorsally about 30°. Separate ends of ^{vanes} rectrices on this bird. Prepared to go to Fuentes house for the night. Much rain today. Departed about 4:30 p.m. and hiked via Tower and T.G. Pearson trail to Fuentes house. Saw a Timamotis ~~Timamotis~~ (I think) on ground near tower. Amazilia screaming near Fuentes house. This house about 100 yds. uphill from edge of water in a small clearing. About 15 x 15 in size and built up on posts as other houses in this area. Set 13 snap traps. Saw about 3 bats at dusk but could not catch them. Rain until midnight.

February 25, 1951. Three Rhamphoctes feeding in tree 30' from Fuentes house. Many unidentified bird sounds. Parrots made much noise. Saw no mammals & traps not touched. Fresh cat track (ocelot?) in trail. One muscivory duck (?) seen at edge water. Green heron flew into tree along Nencia trail as I started back for laboratory. Saw another rufous mat-mat. Overcast but only an occasional light sprinkle. Shot up into another hollow tree but dislodged no bats. Returned to lab via Fred Miller and Barbara Lathrop trails. Mary had left a banana hanging in open building last night but had caught no bats that way. Perhaps rain inhibited flight of bats. We took a ride in a

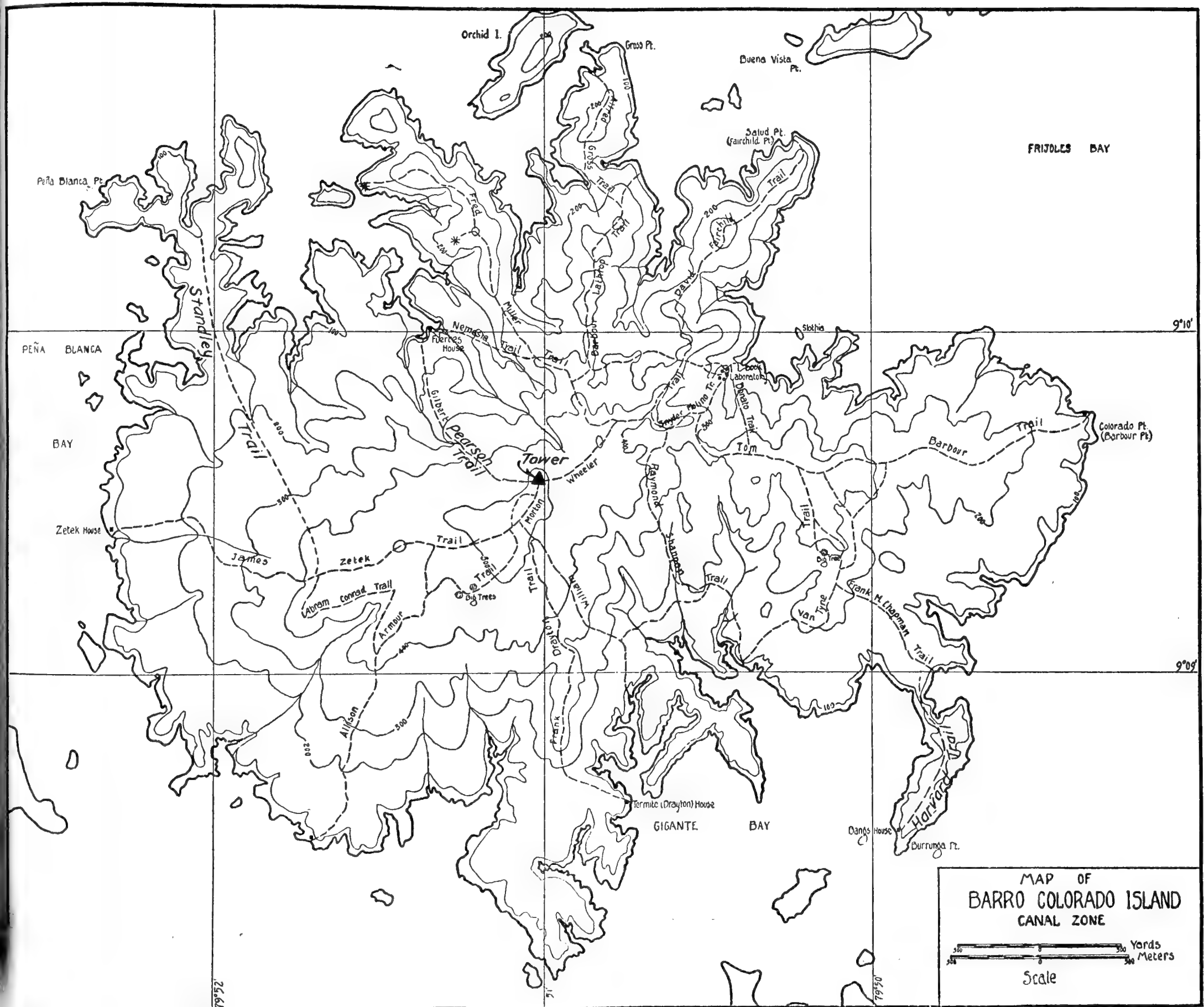
Journal

February 25, 1951

Barro Colorado Island, Canal Zone

small cayuca. Several black vultures and 1 or 2 turkey vultures on trees or ground on a small island (^{slothia} ~~Naethia~~) near landing. Saw 3 Penelope in tall trees at edge water and anacardium in water. One 3' long iguana on Naethia. A boy got some eggs from one iguana and we had a few for lunch. One kind was dumbbell shaped  having 2 yolks in a sac with 2 parts - tasted like hen egg yolk but drier. Another kind had a soft white shell - one sucked out the soft yolk - also tasted like hen's eggs. Asked the cook, Esperanza, to fix us some bread fruit if possible - a large tree of same grew 50 ^{yards} ~~yards~~ from the kitchen? (not ripe). We took a short swim in Gatun Lake near the boat dock - water fairly clear and warm. Many laterally flattened fish with black spot on caudal peduncle visible there (to 10" long). Wrote notes. Many sent up bats. Still overcast in mid afternoon but only occasional light showers. Captured a ♂ Saccopteryx for screen of house. Shot a blue tanager ("azulito") near house. Visited boat landing after supper. One tapir entered water and swam to us. It swam under 6' wide floating ramp - good swimmer. At 6:30 p.m. several of the long-winged fish-eating bats (^(D. las?) ^(Noctilio?)) flew out over the water from edge of jungle. These flew fast and low - did not succeed in shooting any - they did not turn back or feed near of boat landing. Did succeed in shooting one Saccopteryx (leptura) Rhynchonotus over edge of water. Left banana bait in ^a open house with door open and another in Chapman house but no bats found there by 9 p.m. (or in morning). Night cooler.

February 26, 1951. Short cayuca ride before 7 a.m. Breakfast. Saw 2 iguanas, 1 1/2' long, ascend branches of tree hanging over



Journal

February 26, 1951

Barro Colorado Island, C.Z.

water of lake. Hiked up Donato trail looking for bats. Flushed 2 or 3 from trees - these flew rapidly away. Walked along Thomas Barbour trail and shot a peewee (?). Then along Van Tyne trail and took detour to Big Tree. The tree was biggest I have seen on Barro Colorado. A peccary grunted and ran from base of tree as I approached. Found about 40 Saccopteryx bilineata on trunk of the big tree from 5 to 20 feet above ground and between the high buttresses in a light area. Shot about 6 of these (1 ♂, 5 ♀♀). Shot an ant wren near this tree. Returned to laboratory area. Made a box for shipping specimens. Put up 3 birds. Prepared to depart. about 4:15 p.m. we left in launch for Frijoles and took the 5 p.m. train for Panama City from there. Returned to the Tirol Hotel. Completed putting up the Saccopteryx.

February 27, 1951

To Chilibrillo Caves, Canal Zone

Visited Jorge Memorial Lab and talked with Drs. Clark, Fairchild, & Hertig. Clark planning trip to Mexico soon in order to study yellow^(?) fever in monkeys there. Fairchild interested in horse flies. Hertig in Plebotomus (sp. ?), the sand fly which is vector of "veruga" in Peru. Hertig gave me some information on Peru. Traxido took me back to Hotel after visit to Arceon Commissary. About 1:30 p.m. Traxido picked up the entire family for a trip to Chilibrillo Caves. There are limestone caves about 100 yds. from the Trans-Isthmian highway. A hole has been made in the top of one chamber and an elevator carries out the mined bat guano. A house near caves advertises "abono de

Addenda: Inside Chilibrillo Caves many (hundreds) of cockroaches 1 to 2" long on the walls and an occasional whip scorpion, which-
 bred fish up to 6" long in pools in the caves (not blind fish).
 Triatomids, carriers of Chagas disease, also supposed to be common
 & Trápido said the bats here a possible reservoir for this disease.

February 27, 1951

Chilibrillo Caves, Panama Canal Zone

mercado. "Before the highway these caves were much less accessible than now. The largest cave was about 100 yards long with shallow clear water in part of it. Largest cavern about 30 feet high and 100 feet ^{across} ~~across~~ clusters of up to 20 or 30 Phyllostomus hung from the ceiling. Bunches of Carollis were somewhat lower, & many of these flying about. Shot several Phyllostomus and netted part of a hanging bunch of Carollis. Netted a single bat without a leg - nose bent with tail protruding up ^{at center} halfway of posterior membrane. Shot 2 long ^{longchophylla?} faced reddish brown bats near the entrance to cave. No extensive mining of guano in this major cavern. In an adjacent cavern with ceiling only about 8' or 10' maximum, the vertical elevator was located. Many Carollis here and a few of the long-faced, extremely long tongued, reddish brown bats (got 2). Then went into a narrow tunnel cave about 2 to 3 feet wide and 6 to 15' high where Desmodus was said to be. Had to wade in water more than wait deep part of the way. Shot about 8 Desmodus in pockets and crevices overhead. The roosting places easily detected by the greasy black guano on the rocks below. Saw a few half grown young. Shot a or Scolecophagus in this cave in a rather light place on wall. Trápido says they breed all year round. In all about 1000 Phyllostomus, 20 Desmodus, and 1500 Carollis seen. Trápido said Desmodus more tame and numerous than on any previous occasion he remembers. We drove to a ^{picnicking area} ~~peaks peak~~ along road and Trápido demonstrated how to collect Phyllostomus from a hole in a hollow tree by blowing

Journal

February 27, 1951

Panama Canal Zone

a little smoke in the hole and picking up the flies with a sucking pipe of glass. Then drove to Summit Experimental Garden where we hoped to see leaf cutting bats but this was closed. Returned to Tivoli Hotel at 5:30 p.m. with a good supply of dead and living bats to be prepared.

February 28, 1951. Prepared specimens in room of Tivoli Hotel. I was picked up by Trapido about 10:40 a.m. and we went to visit the Peruvian ambassador to Panama, a former Cornell man (Don Emilio). He gave me two general letters of introduction which stated that I was on official business of the university and a scientist; then, with the U.C. dayzler, might help get gun permits etc. Returned to hotel and put up bats. Packed and checked out. Trapido picked us up at 5:30 p.m. and drove us to a ~~pick~~ picnicking place on Cerro Azul, overlooking Panama. It was cool there - for first time in Panama - but there was a wind. We left about 9:30 p.m. and went to Tocumen airport where we boarded Braniff flight 403 for Lima about midnight.

To Lima, Peru

March 1, 1951.

~~February 29, 1951.~~ First land seen under the plane (and fog) was flat coastal sandy desert with many crescent-shaped sand dunes - apparently in southern Ecuador. There was much such desert before we reached Lima about 10 a.m. Fog obscured the ground most of the way. Took about 1/2 hour to get through immigration, customs, etc. Then took taxi to Lima and Hotel Maury. The Maury is about 50 years old, wooden, and spacious. We seemed to be the only U.S.A. tourists there. Food excellent and rather reason-

Journal

March 1, 1951

Lima, Peru

able. Mary put up 4 Carallia she had brought from Panama. Looked around the city a bit.

March 2, 1951. Went to Departamento de Inmigracion to get our passports and entrance cards. Then took a taxi ride to ~~suburb~~^{suburbs} of San Pedro + Miraflores and visited the Chorrillo and Herradura beaches. Hundreds of bathers in the water and hundreds of "carpas" (small dressing tents) on the sandy beach. Most of shoreline bounded by high cliffs and only a few sandy swimming beaches available. Saw a white breasted cormorant (guanay?) in the surf, and several small gulls with poorly defined dark gray on heads (laughing gulls?), and many large dark (Heerman-like) gulls on sand. Uncultivated or planted ground ~~is~~ barren + rocky. More or less overcast all day (summer here). Returned to Hotel Maury for lunch. Spent afternoon at the American Embassy registering, getting no specific help on gun permits, reporting to military attaché, and talking with a Mr. ~~Isis~~^{Giesecke} (formerly of Cusco). Giesecke suggested Et Celestino (assistant to Vargas, botanist) Kolinowski of the university at Cusco as a good man from which to get information concerning the altiplano. Returned to Hotel Maury.

March 2, 1951 Visited the Museo "Javier Prado" of the University of San Marcos. Javier Ortiz de la Puente, who had been at the Chicago Museum for 6 months, arrived about 10 a.m. He spoke some English and offered to help me get my gun permits. The museum had a new jeep and Chevrolet carryall. We went to the office

Journal

March 3, 1951

Lima, Peru

of the "director general ^{de} investigación, vigilancia, ~~and~~^e identificación." There we found out what was necessary. ^{We} had to get special paper bearing a seal and write the request on this in a special form, then go to post office and pay 10 soles plus 34 for an arms license. Picture must be affixed to application. Certificate from a doctor must accompany application. This is only for the first necessary ^{permits.} ~~papers~~

We got the paper & typed application at the museo, then went to post office but it had closed 5 minutes earlier (11:30) for the day (Saturday). In the afternoon we visited the Parque de la Reserva. A few ponds and statues, lawns, trees. Saw a nearly black small finch, band-tailed (?) pigeon, many black muntjacs (*Gallinago*). Returned to hotel. The Museo "Javier Prado" quite seedy. Birds stuffed and crammed into or on top of glass cases. Poorly or not labeled. A few articulated skeletons. I did not see the study collection. However, got a general idea of what might be seen. About 5 mounted condors with the other birds. Ortiz and another man spoke English better than my Castellano. The bat historian ^(sp?) Ferreyra was listed on a schedule of courses. One man who was studying molluscs he said that the condor seemed to be better adapted to feeding on fish on the coast than to feeding on the scarce animals in the mountains and that one could usually find many in the Pisco Bay area at this time of year. I was to meet Ortiz Monday morning to continue work on the gun permits. The "Haidanger," steamer carrying my equipment, was to arrive March 9 at Callao.

Journal

March 4, 1951

Lima, Peru

Sunday. We hired a taxi for S 25/ hour and visited the "muelles" at Callao. Several ships unloading at good piers. The large barren island of San Lorenzo partly protects the harbor but there are 2 long jetties too. Much guano and gold ore in sacs on the docks. Beach here made up of rounded rocks about 6" in diameter, ^{uniform in} quite ~~same~~ size. A few bathers here (at the "punta") and a wide walk with a few stands selling delicious looking pork & bacon sandwiches. Several small swallows with white breast and blue backs flitted low over the rocky beach. a few guanays in the surf. Flocks of Franklin? gulls with indistinct black markings on head. Brown pelicans. A nice clean rock beach. We returned via a road bordering the ocean - the Costa Negra - where beach was of smaller rocks and the surf was supposed to be dangerous for bathers. Returned to hotel Maury. Tall ^{corn} ~~corn~~ and cotton grew in some fields along the way. The contrast was strong between the ~~low~~ homes of the rich and poor. Our driver pointed this out many times - also the comparative luxury of the military. He said that the "obreror" were now much better off than several years ago, that there were some hospitals for them and one large housing development near Lima.

March 5, 1951. With help of Javier Ortiz, got the proper tax "timbres" for my "licencia de armas"; then went to another branch of the Caja de Depósitos and made a donation of 10 sales to the police hospital. Then went to a passport photo place and had profile picture taken for

Journal

March 5, 1951

Lima, Perú

my licence. Visited at the museum and saw the collection of study skins. The larger birds (macaws, ciconiiforms, nultures) stacked on top of one another on narrow shelves of book cases with glass doors. The smaller birds stacked like cordwood on deep trays of 2 wooden cabinets. The Ramondi collection, taken in the 1870's, was mixed hodge podge with the rest and many birds had to be handled to get at any particular specimen. There had been no collecting between Ramondi and 1935, according to Ortiz. Ortiz realized the sad state of the collection & the need for space - having been at Chicago museum for 6 months - but so far he had been able to do nothing about it. (The director, Vellard, was interested in venomous snakes, frogs, & ethnology, and had done work in Brazil, Venezuela, Bolivia etc.). Ortiz had a paper on bats of the Lima area in manuscript. There were 14 species accounted for. Many photographs of live bats, bat caves, & skulls of all (save 1). This paper to be published within a few months. Talked at length with a German, Dr. Wilhelm Köpcke, who was an ecologist who had come to Perú because it offered a great many ecological situations within a small area. His especial interest was marine invertebrates. He knew Stresmann and Lorenz and seemed to have a fair knowledge of modern ecology. I returned to Hotel Maury, then went to the Clínica Anglo-Americana for the physical & mental health

Journal

March 5, 1951

Lima, Peru

certificate needed for my arms license. This was a Permanente - like place. They made out several cards, took my pulse, temperature, height, & weight, & had me undressed & on a table before they asked what I wanted. The doctor was a Harvard man & quickly fixed me up with a form certificate ^{guaranteeing} ~~guaranteeing~~ me to be free from syphilis, intestinal parasites, & all sorts of other things, & vouching for my mental condition. Too late for further business today.

March 6, 1951. Picked up my pictures at the photo place and took everything to the Licencia de armas department on Avenida España, frente de la Prefectura. They told me to go next Saturday to the "gabinete" in the Prefectura and have my fingerprints taken, then return to this office for final paper work. Shopped. Bought dirty formalin and carbon tetrachloride in a "botica" without difficulty. In the afternoon went to Callao for \$5 1/2 (10¢) in taxi with several others. Went to Casa Milne (opens 3:30 p.m.) and gave them a copy of my bill of lading. They said that they would give me a letter to the aduana concerning my gear, to arrive Friday. The ammunition would need a special permit from the Ministerio de Gobierno. ~~Re~~ Many Franklin gulls - hundreds - at Callao waterfront. The older parts of the town had streets of rough stone bricks & streets were narrow & sidewalks narrow with little ^{auto} traffic in these parts. Returned to Lima

Journal

March 6, 1951

Lima, Peru

via a good street car ("tranvia") at a cost of $\$0.45$ ⁵, about 3¢. Phoned Ortiz & arranged to meet him tomorrow.

March 7, 1951. Met Ortiz at Museo J.P. at 9:30 a.m.

We went to the Licencia de Armas place & found out where the fingerprint department was. Also got information on kind of paper necessary to get ammunition from aduana. Then bought "papel ensellado" and typed the letter. Got a letter from Ortiz introducing me to Ensigne Avila of the Compañia Administradora del Guano so that I could get permit to visit guano islands. Went to Sociedad Geografica Militar at 310 Avenida Arequipa, & after presenting my documents to a military big shot I was allowed to buy a fine 8 sheet map of Peru, 1950 edition, for 150⁵ (\$10). The army people were very nice. Neither army nor police seem to be unfriendly or suspicious toward Norteamericanos. The ^{Caja} ~~place~~ de Depositos closed for the day at 1 p.m. so couldn't get tax stamps. Talked with Giesecke at the U.S. Embassy. He said that the 7th day adventists had an establishment (and clinic?) at Julica near Puno, and that the Maryknoll Fathers had an establishment at Jr Puno. The authority on the Quechua language was JM Farfán of the Museo de Cultura, Avenida Alfonso Ugarte 650, Lima. Giesecke had a copy of "Handbook of South American Indians," Smiths. Instit., Bur. Amer. Ethn., Bull. 143. Vol. 2 - the Andean Civilizations. \$4.50. Many photographs and accounts of Ayмара and other Indians. / Ortiz said the place to get ammunition was

Journal

March 7, 1951

Lima, Peru

Casa Reborn, Calle Pasa 643. One could usually get 22 shot shells and shotgun shells there. You had to have a licencia de Armas ^{in order} to buy ammunition. Rec'd letter from Colin Sanborn ^(Chicago) dated March 5 + stamped at 9:30 p.m. in answer to mine mailed March 3. Street system different here. The "calle" are only one block long, each bearing a different name. Now the "jiron" have been added which have same name for whole length. So a place has both a "calle" + "jiron" address. There are several Avenidas - wide, two streets separated by a park - sort of a divided highway. There are five. The other streets are narrow, the sidewalks are only wide enough for 2 persons side by side, and the tranvias graze people standing on the curb (actually overlap sidewalk on turns).

March 8, 1951. Bought necessary tax stamps at Caja de Depositos and took application for ammunition permit to Ministerio de Gobierno. Went to Ministerio de Fomento to look for maps but it did not open until 11 a.m. Returned to hotel. Shopped for books and other items. The International book store had F.L. Herreras "Catalogo alfabético" etc but they wanted 5/100 for it and even more for Maccagno's "Los Arqueólogos Peruanos." Weberbauer "El Mundo Vegetal..." etc "was selling for 5/60, about \$4.00 (12.50 in USA). Looked for Enrique Ovila at the guano company but he was not in. Mortened adult condor in office of the "Compañía Administradora del Guano." Bought large pressure cooker (\$23) and other items. Prices of U.S.A. kitchen ware about 25% higher than in U.S., but everything from automatic washers + vacuum cleaners to

Journal

March 8, 1951

Lima, Peru

electric mixers and flashlights available (no Hopalong Cassidy toys or television, however). Premium stoves and excellent appearing gasoline and kerosene pressure lamps (Premium or ^{similar} ~~small~~) common. Our stoves & lamps (in shipped equipment) are "coal to Newcastle." All kinds of tools available.

Canned foods high - mostly imports from USA or Chile or elsewhere. American evaporated milk as cheap as that made in Argentina (5/2.30/can).

March 9, 1951. To Callao via train. Got letter from Milne Co. to aduana. Took this to Terminal Maritimo & got a baggage carrier who spoke some english to help me (Adán Colán by name). The "Hendanger" had not started unloading. Visited the ship & lunched aboard with the captain, & Mr. & Mrs. Warren Small of El Paso, passengers. Ship trim & clean. The mates seemed to be British but captain & vessel Norwegian. My jeep & trailer unloaded at 1 p.m. They had been stowed below decks on top of cargo & were unscratched. The local stevedores were rough & unskilled and made a big dent in front corner of trailer in hoisting it out of the hatch. Jeep & trailer put in yard near customs house. Office closed at 1 p.m. so could not get paper work done today. Returned to Murray Hotel.

March 10, 1951. By bus (5/.55) to Callao & met Adán at 8:30 a.m. Much rushing around to get signatures. I balked at paying ⁵/419 (about \$100) for the unloading service, based on volume of my 2 cars, but could not talk the aduana out of

Lo Journal

March 10, 1951

Callao, Peru

it. He was understanding but had to pay the men, he said. The guard of the cars had to be paid 5/60 for 2 days "work" too. Hitched jeep to trailer & put gas in. We rushed about from man to man getting signatures, had to go to Callao & cash travelers checks to get money, etc. Messed by ~~the~~ one man - the last one - getting the car out today (Saturday). This means more pay for the watchmen - double on Sunday. Returned to Maury Hotel. Shopped. Yesterday afternoon Enrique Avila called on me at the hotel. He spoke good English. Claimed to speak Quechua & Aymara as well, a native of Puno. Now he worked for Cía Adm. del Guano studying the 3 main guano birds (^{Phalacrocorax} Cormorant, Sula, & brown pelican). He was rather ~~quite~~ a loud & showoff character - claimed to be bosom pal of ^{Colin Gentry} Sterling Leopold, Wm. Vogt, A.C. Murphy, Alex Wetmore, etc. He was hoping to leave the guano co. later this year & go to Cornell on a fellowship to study marine biology. He wanted me to send some mollusc specimens to someone named Turner at Harvard - he could not do without export license. He was about to start on vacation to Arequipa & Puno with wife & daughter. Going to give a few lectures at Univ. of Arequipa. Like everyone else he recommended seeing Nicholson ^(M.D.) at Arequipa (vice-rector of U. of A.). He thought that Dr. Maximilian Kuczyński Goddard, of Meraflora, could give me ~~much~~ ^{much} information on the Puno region as connected with some religious group there. At present time Avila unable to go with me to guano islands but offered to do so whenever oppor-

Journal

March 10, 1951 Lima, Peru
 turvity arose. Said guano production ^{previous} up now over ~~previous~~ years (more birds). Condors infrequent at the islands but still shot there & on mainland. Said Los Viejos island near Pisco usually had condors.

March 11, 1951. Sunday. Brief shower this morning. wrote letters. In afternoon hired a car for drive to Chosica (40 km.) and return. Saw the large mouthed caves on Cerro San Augustin, just outside Lima on Avenida 28 de Julio - Ortiz had taken several kinds of bats there. The road went up Rimac valley to where it was about 1/2 mile wide. High steep hills on each side of valley - barren, rocky. Remnants of old walls where there were ^{houses} ~~houses~~ near ^{base} of hills. Aqueducts along sides of some hills near Chosica. Black vultures main avian species apparent - some feeding on edge of road & group of 30± perched on one small rocky hill. Much cotton in fields (green leaves, in flower). A bamboo-like cane grew at edges of fields. Eucalyptus & pepper trees common. a few green pastures with many trees at foot of rocky slopes. Hydromatic plant at Chosica - the spilled water ^(stream) cascaded down the rocks for several hundred feet ^{in a stream} (8' wide). Several brown mocking birds seen and many swallows as well as small ^(ground?) & large ^(mourning?) dove. Many large & clean appearing houses at Chosica but also many adobe shacks. Stopped at Pension Lourdes to see Dr. C. M. M. M. but found that he had left Chosica & now they did not know where he was. Apparently so little rain that erosion of the bare hills or flash floods not a problem. The Rimac



Journal

March 11, 1951

Chosica & Lima, Peru.

was dark brown and hailing, about 100 feet wide. Cooler at Chosica than at Lima, & of course much quieter & more pleasant. No wooden fences or barbed wire seen. The main type of ~~farm~~ farm fence is about 4 feet high and built of 2 rows of adobe blocks. Much stone work around the dwellings & gardens. Several ^{horses} ~~horses~~ and a few cattle seen. No herds of livestock. Outside of towns the flat ground is cultivated and the houses (adobe) (or bamboo with or without mud) are located on the lower slopes with retaining walls of stone to support ground under houses. Returned to Lima about 5 p.m. &

March 12, 1951 Went to the Prefectura & found my papers for arms license were not yet there because the man who had to sign them was sick. Was helped much by 2 men who were studying English on their own. Then took bus to Callao & Casa Milne. I was charged for only one additional day for the guard of the car (they could have charged for 3 days; all very nice about it). Took the papers to the Terminal Maritima & with help of my baggage man, Adán Calán, got the ^{& trailer} car inspected and out of the yard. Drove then to Museo "Javier Prado" and left trailer there. Went to Hotel Maruy in jeep & picked up gear & family. Then to the Museo again. Did shopping & brought water for drinking. ^{Dr. Gonzalez} Muga buru, a parasitologist who spoke fair English, guided us about and ^{preceded} ~~showed~~ us in his car off to Miraflores & down the Panamerican Highway about 22 Km. to where it joined the coastal road from Chorrillo. He guided us along a farm road

Journal

Perú.

March 12, ^{1951.} ~~1950.~~ S. of Miraflores, Lima,
 among banana orchards & cotton fields to a spot
 $\frac{1}{4}$ mile back from the ocean where there was green grass,
 & a pool of water half filled with water hyacinths. We
 decided not to stay because of the wandering open &
 the people living within a few hundred yards. We
 returned to ^{main} road and took ^{another} side road to beach. Went
 about $\frac{1}{4}$ mile back from beach on ^{flat} sand with some
 (1-6") short vegetation in spots. Overcast & humid. away
 from people living nearby but trucks hauling sand
 from beach $\frac{1}{4}$ mile away. Saw no mammal burrows
 or sign so set no traps.

March 13, 1951. A little cool at night for no blankets. A short rain
 shower at night. Overcast with high fog in morning. Visited
 the sandy beach briefly. Saw a white-bellied ^{Breasted} cormorant which
 could not fly & several dead ones. Flocks of sanderling-like
 birds on the shore. One flock, in air, contained about 1000 birds. Brown
 pelicans common, & several shearwaters (?), and a few gulls.
 Birds in every direction one could look at the ^{surf} sea. A crab(?)
 was common on sand as evidenced by many burrows, espe-
 cially under dead & dead birds, with fan-shaped area of wet
 sand converging at burrow as if crab dragged wet sand into
 or out of hole. In ^{dry} sand, similar burrows with small
 mound of loose sand. Drove to Callao (about 25 miles) and
 to customs house. Could not get gear today as warehouse
 closed 10:40 a.m. & got all papers signed only shortly before this.
 Stopped in Callao. A fine large indoor market there with
 over 100 stalls selling meat, cloth, vegetables, hot food,

Journal

March 13, 1951

Nr. Lima, Peru.

and other articles. All very noisy & colorful. Returned to Chorrillo & our trailer. (Bought 7 gallons kerosene for S 4.90, less than 35¢). Regular gasoline S/1.0 per gallon and best grade 1.50 per gal (10¢). Motor oil mostly imported from U.S. ~~but~~ ^{and} sells at ^{twice} U.S. prices (S/6 ^{pt.}/_{qt.}). Alto-cumulus & other clouds all day. ~~Looked~~ More shopping in afternoon. Camped at about same spot. At Barranco market a few ^(Petrochelidon) swallows flew about inside but no one paid attention to them - common sight, I suppose.

March 14, 1951. To the Prefectura at 9 a.m. They found my papers & fingerprinted me - all 10 fingers plus hand print. My front & profile pictures of slightly different size & not taken on same day so unacceptable. Went to Callao and met my tramite, Adán Colán. He had had my gear transferred to the resguardo so that it could be inspected. Finally got inspectors to look at it. The inspection was cursory & my 3 guns would not have been found had I not first told them they were in the boxes. Left guns but took my 4 boxes and drove to trailer. Back to Lima to get photo taken & buy special items. For S/125 got a "Favorit" Swedish scale which has 2 pans, one for wts up to 400 gms. & other up to 10 kgs. Works by moving a heavy weight on a lever. Got dial type hygrometer on Calle Miro Quesada. Overcast most of the day as usual.

March 15, 1951. Spent day at trailer unpacking gear & stowing it, putting spotlight back on jeep, running lights on trailer, etc. A few miles toward Miraflores from our camp near

Journal

March 15, 1951

Mr. Chorrillo, Lima, Peru.

km. 22 is an hacienda where Venturo wines are made. The muscat grapes (uva Italia) being sold by the road were large + firm - best I have ever eaten. Avocados (palta), fresas, cantaloupe, chirimoya, + other fruits available. Bananas commonest fruit in Lima - 20 to 25 centavos each. Over the surf near our camp one could always see the 3 principal guano birds - guanay, pericos, + alcatraz.

March 16, 1951. To Lima + got my photographs. Took them to Prefectura + they filled out record cards with my description + took more prints of all 10 fingers + both hands. Manuelo Bermeo Molina, Av. Petit Thours 1179, was studying English + was very helpful in the Gabinete, putting me through before hosts of other people. Naturally my papers were filed under B - for my middle name. Now have to wait until Wednesday for my final license (now Friday). Visited Museo "J.P." saw specimens of Aryzomys, Neotomys, + other rodents. Met Carlos Prentice, part time taxidermist for the museum who mounts birds for the Ministerio de Agricultura + has done some pelagic collecting of petrels + albatrosses. Saw several specimens of an extremely pale Desmodus rotundus from the Chinchar - much lighter than on mainland on this white guano island (why?). We talked of porpoises + Prentice told of seeing them among the fish on the ~~Por~~ dock at Callao. Therefore Javier, Victor, Prentice, + myself went to this fisherman's dock. Thousands of bonito piled there from small motor boats about 30' long. Apparently netted. About 10 cuttlefish 4 or 5 feet long, about 20 sharks (hammerheads, threshers, others) on the

Journal

March 16, 1951

Callao, Peru.

dock. The fishermen said they had had 2 porpoises earlier that day. We went to the Callao mercado & found fish sections closed but were told one whole porpoise still there (locked up for the day). Prentice showed us nicely mounted sea birds and fish in a room close to fishermen's pier. He had many large fish from the Amazon - he had worked at a museum at Iquitos. We returned to Lima. I returned to trailer. We packed up & headed S. on Carretera Panamericana. Surin near Pochacamac ruins (old adobe buildings) first notable town. Passed Pucusana, Chica, & others (no ^{distinct} signs except those of Esso oil company). Much sand & barren rocky hills. Surin valley broad & cultivated. At ~~the~~ ^{top} of first long grade a lot of cholla-like cactus was growing in rocky soil. We pulled off the road at about ⁷⁸ km. ~~to~~ to camp. Many mosquitoes present. Set 7 snap traps under yellow flowered compositaceous (?) bushes on sandy ground but little hope of capture as area had ^{apparently} been flooded from time to time by draining water from cotton field up the slope.

March 17, 1951. Addenda; Lima - shotgun shells (British) available in shot as small as #10 in 12 gauge & usually 16 too, at 35 ^{soles} ~~soles~~ per box (about \$2.40). One mouse (*Phyllotis*) in trap; put up at 10 a.m.

^{speedometer 3740} started toward Pisco. About km. 98 reached San Antonio - many stands selling local apples & bananas. Much cultivation of flat ^{green} area - cotton & bananas especially. Mockingbirds common. ^{then sand & rocks again.} ~~acacia-like trees.~~ ~~scrag trees on ridge~~ near speedometer 756; Kilometers 102 (speedometer 758.5), saw Asia Island about 1/2 mile off shore. Buildings on the island and many horizontal walls (?) as if to divide guano digging areas. Speedometer 765 crossed river near

Journal

March 17, 1951

Dept. Ica, Peru

town of Asía. Saw vermillion flycatcher. No high ocean cliffs directly opposite Asía Is. + road not on beach - saw no condors + there appeared to be few birds on ground on Asía Is. (many on smaller island closer to shore). Km. 122 (spd. 768) - oak-sized trees on ridge to E. of road. At spd. 774, about 35 km. before Cañete, saw one condor overhead. Organ-pipe cactus in some dry draws in this area. Km. 150, Cañete valley - flat, green, cultivated, much cotton, eucalyptus trees, other trees for windbreaks. Mockingbirds common. Crossed river at km. 175 + green area ended at 178. at 3:15 p.m., km. 185, road on sand desert at tops high conglomerate cliffs. Saw several condors, + black + turkey vultures, soaring parallel to beach near tops of 500' conglomerate cliffs. Dead guanays common on sand. Took photo of cliffs (Kodachrome). Road descended to beach. Town of Jahway on beach at ^{spd. 822} km. 205. Brief talk with guard at "garita" - crossed to state of Ica from Lima. About 15 black vultures on ground near river at Jahway. Road continued on beach to km. ^{spd. 830} (no condors seen), then ascended to tops of cliffs to a fertile cultivated plain (grapes, cotton). Spd. 833 reached Chuncha Alta, largest town yet encountered + best service station S. of Lima (large + modern). Many burros + horses as in all cultivated areas along the way. The most verdure yet seen in Peru by us. Crossed another bridge over river at spd. 837 (bridges all one way). Much cotton growing in dense stands. Spd. 841 (K. 234) crossed longer bridge over a river. Rivers all high + muddy. Saw a few Crotophaga on fence wires near cotton. Mourning doves (1-3 at a time) common. Km. 249, lagoons

Journal

March 17, 1951

Nr. Pisco, Peru.

and marshy area. Many swallows (black throats, light breast, bluish back - like barn sw. but tail not so forked). Black-necked stilts in water ($10\pm$). Franklin gulls ($10\pm$). Saw first ^{of trip} reptiles (12" lizard on road) and large gopher-like rodent running on ground. Camped at km. 253 on a sandy + rocky knoll overlooking Pisco. Chincha Islands plain in the distance. Set 10 snap traps in ^{coarse} broken area of grass near the road. Warm evening. Many mosquitoes. Dined on bananas fried in Holland canned butter accented by Callao beer. High hills on headlands of point south of Pisco (condor roasts? for birds going to San Gallan?). Many buses of all ages on roads. Some large station wagons labeled "Ica express."

March 18, 1951. Odometer 855, ^{at start} ~~K 258~~ from near Pisco. Did not take turnoff to Pisco. Kilometer 250, date palms (wild?) and sand, palms ending K 262. Then plain of sand, scrubby palms, thorny bushes + trees, with hummocks bearing grass or forbs, this ending K 275. Then sand desert. K 287, $20\pm$ palms + sand mounds bearing grass bushes - road excellent in this area. K 297, $200\pm$ palms + grass on sand but not cultivated. Miles 397, Km. 319, cultivated flat green area. Several sparrow hawks seen. Cotton + planted trees. Miles 405, Ica, at 1:30 p.m. - large town. Clear sky overhead but cumulo-nimbus clouds over mountains to east. Warm + dry. Many green scasia-like scrubby trees, probably thorny. Green area ended K 360, then road straight through desolate rocky wastes. At miles 460, a tunnel through rock, then road descended sharp switch-backs. Miles 462 (K 418) river crossed via bridge. Green

Journal

March 18, 1951

Nr. Nazca, Depto. Ica, Peru.

valley $\frac{1}{2}$ mile wide. Cotton, bananas, orange orchards. Up into dry vegetationless rocky hills again and crossed another green cultivated valley (about 2 miles wide) a few miles further on. Road ~~went~~ ^{went} down valley several miles - many oranges. Then into rocky barren wastes again. At miles 976, another green flat cultivated valley floor ($1\frac{1}{2}$ miles wide). Much cotton in flower. Across valley & up into rocky hills again (5 p.m.). Miles 981 on speedometer = Kilometers 447 past. At Km. 468 (M 995), reached broad green cultivated valley. Small doves with short black tail were common (individuals). Got gas at Nazca - much smaller than Ica - crossed bridge (river). At K 476 left green area & into rocky country again. K 482 - 487, thorn bushes & some cultivation; small river. Camped on sandy rocky ground at K 513 (near road to Puerto San Juan). Moon half full & waning.

March 18th, 1951. Mary had chills followed by fever of 102° . I gave her 1 cc. penicillin at 6 a.m. She was better at 8 a.m. & we pushed on. Soon came in view of ocean. K 581, a small village near mouth of a river. Many shrubs & some cultivated fields. All dry rocks & sand between Nazca & here. K 595, Yauca - green valley $\frac{1}{2}$ mile wide filled with large olive trees. This place also near mouth of a river. Saw condors several times during day, near the beach. Stopped for $\frac{1}{2}$ hr. before noon at beautiful sand beach at Km. 600. Wind from sea; much sand drifting over road. Franklin gulls (10^{\pm}), 50^{\pm} dark gray gulls with black bill & legs, a few larger gulls (yellow bill with red tip, yellow legs, & nearly black head and dorsum but white of underparts extended over shoulders, tail short & white

Journal

March 18, 1951

Dpto. Arequipa, Peru

with black tips $\frac{1}{4}$, white posterior margin wings). The Franklin & gray gulls fed in ^{on wet} ~~surf~~ sand after ^{each} wave ^{retreated} ~~separated~~ & flew when incoming wave reached them. Departed for Chala at noon. This

area more interesting than previous parts as some vegetation.

Low shrub with yellow composite flowers $1\frac{1}{2}$ inches diam.

bordered much of road. Also borehound along road & a yellow

poppy. Shrubs ~~in~~ formed fairly solid cover ~~in~~ on some slopes.

Pepper trees & green acacia-like trees in sandy canyons. Saw several small birds near road. Saw 1 lizard

10" long & greenish on road. Chala at about Km. 675. Small town

but modern appearing Hotel Turista. Had to show passport & driver's license to men at control station. The international driver's license seems to be recognized by them & they were very polite & inoffensive.

Chala at S. end of a long curving sand beach with beautiful surf of blue water. Saw ^{a condor} ~~condors~~ here, many brown pelicans, the dark gray gulls (100+), and 2 osprey(?) like hawks with long wings flying marsh-hawk like over the surf (white undersides & under wings). Chala appeared like a pleasant place to stay but surrounding region was rocky waste with no cultivation. Gold mines about 40 km. into mountains.

Pavement ended Km. 678, then corduroy & unpaved - one truck driver called it "fco." Road improved somewhat after Km.

710. Shore rocky with boulders in surf and rocky points projecting into ocean. Many of these points snow white with guano although few birds on them. Saw condors.

Near Km. 685 walked 200 yds. to beach. Many shells of large sea urchins and of Fissurella-like molluscs

Journal

March ¹⁹18/1951

Opto. Arequipa, Peru

with shells up to 4" long; apparently people gathered there, probably to eat. Many green or brown long lizards (Liolacurus?) about 10" long on rocks 10' to 100' from edge of water. These retreated into holes in rocks or hard ground - caught 1. as many lizards as I have ever seen at one place - perhaps one per 100 square feet. High rocky barren hills within 1/2 mile of ocean edge in this area. Camped just S. of Punta Tinaja (lighthouse) and set 10 snap traps near rocks within 200 yds. of edge ocean. At outermost point of Pt. Tinaja, a ~~rocky~~ point white with guano (almost an island), and 1000+ birds milling near this island just before sunset. At the same time there were streams of low flying birds skimming the waves & flying north toward this island - at least 10,000 birds visible at one time. An occasional piquero seen close to shore. Inspected traps about 9 p.m. & had one large mouse - something like a small pale woodrat.


March ²⁰19/1951. At 6:30 a.m. another similar mouse in another trap. Stratus cloud over land but clear a short distance out over ocean. 1000+ birds visible on rock where milling last evening and 1000+ milling there (8 a.m.). Put up the 2 mice. Departed 10:30 a.m. ^{520 m.} (4164')
(4 miles from camp)

Atico was small but had 3 hotels. The guard at the garita told me it was 4 hours to ^{Ocoña} Atico. Sign said 321 Km. to Arequipa. At speedometer #175 encountered saguaro-like cactus on steep rocky slopes otherwise with almost no vegetation. Cactus for 3± miles. At speedometer #182 there was a roadside spring where we filled water cans. Beautiful views of ocean as road close to surf & rocky shore (within 50 yards of shore). Some sand dunes & drifting sand on road. Saw many long thin

Journal

March ²⁰ 19, 1951

To Camana, Peru.

lizards (same as collected one?) on rock walls which held sand above road. The road went inland & up steep grade (summit about km. 817, ~~speedom.~~ 4198), then down switchbacks to ^(K824) new valley at mouth of Pescadores river. This valley ^(K830) little cultivated, but some cotton & olives. Many bushes, & Fresh lagoon near beach. Perhaps good area for collecting. Small whitened island near mouth canyon. Pepper trees. Over another rocky hump & down to small village where houses were squarish with flat roofs & lined with bundles of reeds or long leaves ~~tied~~ ~~tied~~ standing vertically and tied to crude log supports. No cultivation; perhaps a fishing village. Then much of road too narrow for passing. Finally descended switchbacks to a green valley ^(Ocoña) about 1 mile across & much cultivated. River muddy & 300± yds. wide but bridge ^(K859) modern (steel & concrete). Again reed houses or bamboo houses with flat tops. Many plastered with mud. Brief moment with man at garita who merely asked if I had papers. Saw many small birds in this valley and a Buteo (?) mostly white underneath & with some white on upper side wings. At speedometer 4230 saw 2 condors, ~~sand & rock~~ At speedometer crossed a clear stream about 15' wide, first clear stream seen. In this area beach was wide & sandy. Piles of shells (big clams?) showed activity of the few local people. Speedometer 4248, a wide lagoon inside a bar at edge of ocean. This lagoon continued toward Camana - much marshy ground. About 100 square miles of green cultivated area at Camana. Many orchards of bananas. Cotton fields. Many mud & reed houses. Some houses with pitched roof () with roof as well as sides covered with mud. Gas at the town - adobe buildings & cobblestone lanes. About 100 curious persons gathered to look at the trailer & climbed on various parts making it unpleasant for us. We left town after

Journal

March ²⁰19, 1951.

Nr. Camaná, Peru.

6 p.m. and pulled off road after ascending to about 1000' elevation. Sandy area of rolling high barren hills. Moon nearly full.

March 21, 1951. Departed camp (Km. 166, speedometer 4274) at 9:30 a.m. & headed for Arequipa. Went up a long grade. 6" high grayish plants abundant on hillside; some small cactus; red succulents growing on rocks. Hundreds of burrows below surface exposed by road cuts but no mounds above ground & no rodents seen. At Km. 153 came onto a plane of rocky ground and the mountains Misti, Chachani, & Coropuna came into view, snow covered on upper parts. Km. 100, speedometer 4319, the long narrow green cultivated valley of Tambohu. Stream almost clear. A few sheep. White throated swift seen, & several black vultures. At Km. 68 passed through a tunnel in rock & on opposite side came to another cultivated valley. Surrounding hills red rock & snow capped mts. in distance (took photo). At speedometer 346 came to small town at junction Mallabes (82 km.) and Arequipa roads. Went up a very long grade to perhaps 9000 feet elevation. This through rocky & sandy hills. Through a tunnel at speedometer ⁴³⁶³ 4663, then down a long grade. Reddish rocks mixed with cactus & low plants - appearance like Arizona ^{lower} on Colorado River near Needles. Some tall cactus. Descended to the broad green cultivated valley in which Arequipa lay. City much ^{& more civilized} larger than I had expected - streetcars, for example. We put up at Hotel Turista. It seemed quiet and clean & was in a nice pink building near a small park just outside of the main part of town. Cool in evening; not cold. Moon full or nearly so.

Journal

March 22, 1951

Arequipa, Peru.

Apparently holiday (before Easter Sunday), & most ~~place~~^{store} closed. Inquired for mail at Correos (none). Shopped. Worked on condor report. Wrote letter. Talked with hotel guests. Visited Quinta Bates & talked with Jimmy Thompson (P?), ex-Stanford, who had been in Peru 3 years & had been to school, & taught, at Univ. of San Marcos (for Americans tuition were high & the professors after were absent). At ~~Quinta~~ Quinta Bates heard that one could drive up to Laguna Bulma (toward Ruvo), see flamingos & other birds, & return by mid-afternoon. P. Bates had several little garden houses which seemed comfortable. A black & white, shorn, llama tried to stake on lawn of the hotel. It could bite quite hard. Liked to have neck scratched. Alt. very short lawn but did not seem to make ground bare. Many swallows flying ^{& about} hotel in evenings. Overcast with cumulo-stratus clouds much of day.

March 23, 1951. Another holiday (Friday before Easter). Visited home of Arthur Williams, 318 Moral, but he was not in. Called on Eduardo Nicholson & found out that brother Carlos (whom I wanted to see) was at Yura on honeymoon. Worked on Calif. Condor manuscript. Overcast most of the day but never cold. Flies or annoying insects nearly absent from Arequipa it seems.

March 24, 1951. Shopped. Worked on condor MS. Saturday. Mr. Arthur Williams called & invited me to lunch. I lunched with him & Mrs. W. at their fancy home - a reconstructed old adobe & stone building with thick walls, large patio, etc. The Williams were very willing to give me advice in every way they could. Mrs. W. did most of the talking. They recommended Dr. Bustamante Rivero as a physician here (tho for anything out of the ordinary one went to Lima), and Salazar as a baby doctor. At Puno they recommended Dr. Rivero del Mar.

Journal

March 24, 1951.

Arequipa, Peru.

at Juliaca there was a Clínica Americana which was supposed to be good. The Williams' had lived at Esquilache mine in the high country for several years. They said that a "flicker" like bird (without any red color), which dug holes in the ground ~~in banks~~ ^{in banks}, was common. Flocks of parakeets were sometimes seen. Andean geese were usually seen in pairs. There were hundreds of vicuñas near road to Puno near the highest divide. Guanaco could be seen on the road to Mallendo. ^{The} ~~There~~ change from ~~low~~ ^{sea} to highland to tropical vegetation on the road from Ilo to Tacna was striking and rapid. Viscachas were delicious to eat but one had to pull out the tail as some back tendons were said to be poisonous. There ~~was~~ ^{was} a pond not far beyond Laguna Salinas where many birds not seen elsewhere ^{could be} ~~often~~ ^{found}. A certain bridge north of Juliaca was famous for trout fishing. Chuño was fine eating but you had to acquire a taste for it. Quinoa & another grain grown in highlands were the highest vitamin grains known. A place called Berrantea on Merced St. was best for variety of canned goods. Porcellos was best for dried fruits. Hqtrs. of Hacienda Chucapi was next door to Banco Internacional. "Davila" was a reliable transportation company between Lima & Arequipa. The Prefect, Aramburú, was a fine man & was staying at the hotel; they suggested that I talk with him. Sanborn had collected a rare rat at the Esquilache mine. Don't eat beans at high altitude because of the gas caused. Some highlanders die of intestinal binding when forced by necessity to a diet of tostadas (fried corn). This season the weather had been unusual in Arequipa (how?). The road to Puno was dangerous because of many large trucks coming down. Peruvian garage mechanics were not to be trusted. Peruvian residents should get their reentry permit before leaving the country - otherwise they

Journal

March 24, 1951

Arequipa, Perú.

have delay ^(2 wks.) ~~(2 wks.)~~ and trouble getting back in. Inquired about gun permits at Prefectura. They said you could get permit for a shotgun here in a week or less but that for pistol permits one had to go to Lima. Prices seemed no worse than at Lima for most manufactured goods. Optimus stoves S/55⁰⁰, for example. Shotguns & shells (including .410), (.22 shells) for sale at one store I passed. Clear in morning but partly overcast most of day. Canned milk (Arequipa varieties) cheaper than in Lima; large can S/2²⁰.

March 25, 1951 Easter Sunday. Worked on Calif. condor report. Have seen many turkey vultures here but no black vultures. A common bird in gardens is a sparrow which appears like Zonotrichia leucophrys but which has a chestnut patch at nape and the feathers of top of head raise into a sort of crest.

March 26, 1951. Mailed bat skulls for Panama bats. It was possible to do this, registered mail, without any inspection or papers. Large packages ~~could~~ ^{required} a permit from the Ministerio de Hacienda in Lima, they told me. Air rate high - pkg. costing S/5³⁰ by ship would cost S/137 by air. Worked on condor report. Talked with Wm. H. O'Brien, representative of Draper & Co. (wool buyers) of Boston, about vicuña wool & raising. Rec'd wire from Javier Ortiz saying that my gun permits still not ready (I had phoned him about this on Friday). Bought plane ticket to Lima & return (S/491⁵⁰), Faucett air lines, to depart on Friday (Mar. 30). Acacia trees in bloom in hotel yard.

Journal

March ⁺²⁸ 27, 1951. (Tuesday + Wednesday) Arequipa, Peru.

Mary found ^{*Zonotrichia capensis*} sparrow nest with 3 young in snapdragon bush in patio. Windy today. I worked on ^{Calif.} condor report. Did some shopping in afternoon. In hotel yard there is a tortoise about 3 feet long, alive - Galapagos tortoise I suppose.

March ²⁹ 28, 1951. Visited Williams and he introduced me at the Banco de Credito where I sold my travelers checks for 14.85 sales per dollar and ~~so~~ opened an account. Visited Panagra office and found that air express could be sent to U.S., the cost being about \$1 per lb. and cheaper over 45 kilograms. Large packages required export license. Those small enough could be classified as "samples" and passed by local aduana, then shipped. Panagra showed to me bills of lading where Mrs. H.H. Heller (510 Jorge Chavez) had shipped live animals to Philadelphia recently; she should know all about making shipments. Wrote letters. Worked on condor MS. With Mrs. Williams called on Jack Dwyer, acting American consul here (at Coca-cola plant) but he was out. At Williams' met Dr. Nettles of Lima, ~~a U.S.~~ ^{an} American practicing in Peru. Mary had had pains in chest, ^{Nettles} he recommended X-ray + made arrangements to get them at Isyeneche Hospital. We went there + got X-rays + Nettles examined them but found nothing wrong. Warm day with few clouds - "winter" apparently over.

March 30, 1951. (Friday). Haven't heard again from Puente so am flying to Lima today via Faucett. Plane left 11 a.m. (Arequipa time) and arrived 3 hrs. later (3 p.m. Lima time). Went to some business place but did not find my license. Went to Hotel Bolivar for the night. Called Puente + he came over. He said my ammo

Journal

March 30, 1951

To Lima, Peru.

permit was ready but that the Director who had to sign the arms permit was sick. He had seen Bermeo who told him that my paper was on top of the pile. Will see Bermeo tomorrow.

Plane trip: - Arequipa airport is 8149 ft. elev. Good views of Chachani & Misti without buildings in the way. Challa-like cactus growing near field. I was on coast side of plane. Impression of barrenness even more than from the ground. Occasional vegetated or cultivated valleys. Plane first approached coast near Pisco & had fine view of the islands. San Gallan is large & high and perhaps 3 miles off Paracas peninsula where hills are high too. Peninsula low on mainland side & Pisco area without large hills. The ~~at~~ Chunchos were low and small compared to San Gallan. Asia Island perhaps only $\frac{1}{2}$ mile from shore. Shore flat there but large hills $\frac{1}{2}$ mile inland. Some minutes north of Asia passed a look in the coastline where many small boats were in a small ~~protected~~ harbor. Then crossed a wide area of water (coastal indentation), a small guano island (series of walls; big buildings on beach), then over land again near Pachacamac and descended to Limaambo airport. Took about 20 minutes to get through the lines where 2 different people checked your name, passport, & address - even natives had to do all this. The Bolivian rooms clean and nice but more expensive than Maury (5/55 for single with bath; plenty hot water, towels, etc.).

March 31, 1951. Saturday. At breakfast met Ed Ross (& wife) of Calif. Acad. of Sciences. He had been collecting insects.

Journal

March 31, 1951

Lima, Perú.

and had driven from Santiago, Chile, to Argentina, Bahia, and Lima. He was driving today toward Areca where he was meeting ^{someone} ~~someone~~ ^{Reed's son?} (Bullock's son?) who was going to buy the truck, then going on to Santiago. He was in hurry so we had little time for talk. Then went to Dirección de Vigilancia & finally got my gun licenses. To Callao then where they told me would also have to have letter from Dirección de V. to the Superintendente de Aduana at Callao. Returned to Prefectura & arranged for this. My letter to get the ammunition was ready there (lots of help in last 2 days at cost of \$/70 in bribes; Bermeo would accept nothing ~~but~~ ^{"the thing"} was not in position to push things). Returned to hotel & worked on.

April 1, 1951. Sunday. To airport & tried to get my bundle of sleeping bags with gun inside. Unfortunately people not too busy so found gun. They thought I had enough papers but said to come back tomorrow. A quick \$/50 probably would have helped. Returned to hotel and worked on Calif. condor thesis.

April 2, 1951. To airport at 8 a.m. and got gun at no cost & with little talk, only showing my arms license. Fewer people at airports than seaports so easier to talk to top man and get his o.k. Also more English speaking people around to help & airline people helps much. Then to Licencia de Armas place to request permission to take ammo from Callao to Arequipa. To Callao where they said would have to have a "poleija" for the ammo; this means needed an Agente and had to pay duty. Got a man named Sanette to work on this; he was sure

mar.	Phone Reg. to Lima	25.
mar.	Exp. - plane to Lima + ret	491.
mar. 30	- Taxi to hotel	5.
31	Taxi hotel to Callao & return	20.
apr. 1	Taxi airport + ret.	10.
2	Taxi - Lima to airport	5
	airport to Lima	5
	Lima to Callao	10
	Callao to Lima	10
3	Taxi Lima to Callao	10
	Call to Lim	10
	Lima to Call	10
	Call to L	10

Journal

April 2, 1951

Lima, Perú

he could get box of ammo out tomorrow. Returned to Licencia de armas place. The little man with the mustache (Oficial 2^o de Investigaciones, Anselmo Salazar Montoya) helped me to get the Guia de Circulación for the ammunition & letter to get arms from aduana. Returned to hotel. Worked on thesis.

April 3, 1951. To Callao where Colán got my guns for me in about 1½ hrs. Sanetti had the policy & was still sure could get ammo out today. Took guns back to hotel. Worked on thesis, finishing same, & sent air express (Braniff, 5/130 for 5 lbs.) to MVZ. Then to Callao. Sanetti did not arrive until after 4 p.m. & was unable to get box out in the short time (45 minutes) remaining. He promised to get it out tomorrow & send it to me at Arequipa via Dávila (camiones). I asked Colán to follow this through for me. Returned to hotel & packed, ready to leave on plane for Arequipa tomorrow with guns but not ammo.

April 4, 1951. Took Faucett Airline from Lima to Arequipa departing 7:30 a.m. Sat on mountain side. The Andes crest appears to be fairly uniform in elevation with an occasional high snowy peak projecting above it, perhaps a dozen of such peaks in the 500 miles from Lima to Arequipa. From this crest long barren ridges run toward the coast. Green valleys are rare & only where land is cultivated. Snow atop Misti has diminished in last week so that little remains. Passports checked at Lima but no inspection at Arequipa. Had car greased, carburetor cleaned & high alt. metering rod put in, spark set for altitude, all at cost of \$2.41. ^{Visited Jack Dwyer, E.E. UU. acting consul here.} Stayed at hotel.

Journal

April 5, 1951

Arequipa, Peru

Visited Mrs. H. H. Heller, wife of Edmund Heller. She had nice house at 501 Av. Jorge Chávez. Dressed like a man & with short haircut. She had collected some birds ^{and} mammals in the Montaña and was going to send them to Chicago. Was busy having various cabinets made and dark room set up in her house. She had a pet fox which was more or less tame and had had a previous one which was very tame. She knew how to get permits to ship specimens out - it was complicated if they had any value, less complicated if without value. She had set of MacBride (Flora Peru) and several other good reference books. She had been here a year or more & selected Arequipa because climate dry & goods obtainable. She had been to Peru with Edmund but not this part. Her interest mainly in getting money for specimens. We stopped a lot, checked out of hotel, and drove several miles toward Puno (to 500' above ^{Barom. 8300} hotel level). An Crso sign at fork about 3 miles out of town ^(Barom. 7750) said Km. 276 to Puno (speedometer 4419). Camped in rocky desert area with good views Chachani & Misti. Cactus, shrubs, & herbs here covering $\frac{1}{3}$ ground surface. Clear night.

April 6, 1951. Started 9 a.m. with speedometer reading 4422. Road headed toward Picchu Picchu. Spdtr. 423, fork to Jesús, end of pavement, and sign saying Puno 270 km. Km. 13 from Arequipa = spdtr. 426. At km. 25 a chain across road; control station - Chikuta I think. Had crossed 2 small rivers and seen many birds before reaching km. 25; many flowers in bloom including blue lupine and a yellow daisy like flower 2" in diam. on yellow-green shrubs. Many cultivated terraces near Chikuta and Misti prom-

Journal

April 6, 1951

E. of Arequipa, Perú

went behind them. At about km. 30, elevation 10,500, saw 3 llamas. Ground $\frac{3}{4}$ vegetated; some cactus; green aspect. At km. 43 (M 446) saw 2 condors. At Km. 50 encountered the cushion plants growing in 3" thick layer on rocks, bright yellow green in color. Ichu (?) grass clumps common. This grass very stiff and sticky at tips. At K 66, a few miles after reaching top of many miles of grade, came to Laguna Salinas. (about 13000') Lake about 3 miles long and shallow. About $\frac{1}{4}$ mile around edge was drying mud, firm, with layer of white salt. Saw 3000 or + pink flamingoes in the water far from shore, mostly with heads down as if feeding. There were 200± black and white geese (?) on water. Too far for details to be seen. Soon encountered first bands of alpacas. There were young of various sizes. All colors; black, white, browns, solid & mixed; some browns very reddish. In all about 2000 alpacas & llamas seen near Laguna Salinas in flat (nearly) green grassy areas with occasional pools of water. Indians tending flocks dressed Peruvian highlands style. One woman wore an outfit of bright magenta and a black derby hat; she was chasing the animals vigorously to keep them on the road. We camped at about km. 85 (speedometer 475) on a flat llama-tracked area of ichu clumps, 100 yds. from rocky hill about 50' high & 200 yds. diameter. Soon noticed viscachas on this hill. Shot one ♂ with .22. Set 17 snap traps among rocks near base of hill, baiting with rolled oats. Cold evening, wind dying about sunset. Road has been good dirt road so far & car running fine at

Journal

April 6, 1951

13000'
Nr. Laguna Salinas, Dpto. Arequipa, Perú

this altitude (13800 by altimeter). Near Laguna Salinas saw dead body of large skunk, black with large longitudinal white stripes, and surprisingly long claws. Perhaps mud flats are good pickings for skunks. Near Chivata saw a large hummingbird with some ^{all} white tail feathers - wing movement seemed slower than that of familiar kinds.

April 7, 1951 Snap traps unsprung & untouched. Shot 3 dicky birds on rocks; all unfamiliar to me. Saw flicker-like bird with ^{some all} white tail feathers on rocks. Mary saw 1 lizard among grass clumps; we saw one near Laguna Salinas yesterday. Put up viscacha & 3 birds. During day Mary shot a viscacha with .22 & I another; saved skulls, ate rest - very tasty. Min. temp. last night was -15°C . Heavy frost on metal, grass, & windows. Some clouds - alternately too warm & cold; breeze in afternoon, dying in late afternoon. Sunset & rise about 6 o'clock. All except Carla were somewhat headachy or sick - dizziness & bright light probably contribute.

April 8, 1951 Departed camp 9 a.m. Cloudless. Snap traps held nothing. Speedometer 4475 at start. Proceeded toward Salitroso, only gas station between Arequipa & Puno. Found it at Km. 109 when had about 1 gallon gas left. Road climbs climbed head of valley of wet green meadows where there were many alpacas. At Km. 124, miles 450, saw 5 condors. Soon came to crest of road and a flat unvegetated plain. Fork of road to Inata marked plainly. At Km. 133 encountered first vicuñas and in next 15 km. saw about 200. At Km. 133 a green grassy area with lake. Counted 33 white geese with black wings there, perhaps the Andean goose. The divide

Journal

April 8, 1951

W. of Puno, Peru

was inconspicuous & occurred at about km. 144 from Arequipa (altimeter read about 15000') (about equidistant from Puno). A little down the Puno side (km. 148 to Arequipa, 140 to Puno), saw 2 large mallard-like ducks in pond by road. Shot one with .22. Then at km. 151 (to Arequipa) saw a black caracara? with some white below and on tail (red face) walking on road. Shot this with .22 also. The road was bad in spots - ruts, high centers, holes - but no impassable places & fairly good between bad spots. Not muddy. A few flakes of light snow fell in afternoon & sunset with cumulo-nimbus clouds. Rolling green meadows & clear streams from about km. 133 on - reminded me of parts of the Rocky Mts. in Wyoming. We camped by road near km. 129 (to Puno), on short green thick grass near a clear stream. Many short bushes (about 2' tall maximum) with cedar-like leaves. Set about 10 snap traps baited with rolled oats. Ground well trampled & grazed so expected nothing. Visited traps at 8 p.m. & found a mouse (Akodon?) in trap set next to hole in ground under bush in flat ^{short} grassy area 20' from stream. Cold clear night April 9, 1951. Tail of mouse in same trap Akodon caught; no other traps sprung. Put up mouse & hawk. Clear day. Minimum -8°C . last night. Departed noon (odometer 4527; km. 125 to Puno). Soon passed village, Tincopelica, ^(km. 123 from Puno) ~~La~~ ^{La} ~~La~~. River 15' wide & clear; looking down from bridge saw several trout about 1 foot long. Road then climbed. Most of trip through vast green rolling mountains. At km. 111 from Puno saw 1 large tinamou walking on road. Km. 110 saw 10 vicuñas. Passed various large lakes during the day and saw hundreds of alpacas. Horses at 15000' altitude appeared to be of normal size & conformation. At km. 101 (mileage 4543) came

Journal

April 9, 1951

Nr. Vilque, Depto. Puno, Peru

to fork with choice of Juliaca (86 km.) and Puno. At km. 96 road passed close to a lake $\frac{1}{8}$ mile long. Two black & white geese with one few downy chick swam at edge. At a larger lake saw 3 pairs of the geese, one pair with 4 downy young, swimming. Also 100 \pm coots in this lake and 20 \pm Franklin (?) gulls with black heads. Willet-like shore birds with large white wing patches were present (later seen near Vilque). Km. 91, lake about 1 mile across; more coots (red legs, orange-yellow frontal shield, larger than American coot). Km. 87, shot a burrowing owl with 22. (07945). Acted like familiar burrowing owl, including bobbing. Stood on flat ground. Km. 81, lake 1 mile long; 30 \pm coots, 15 \pm gulls. At about km. 56 shot a large tinamou and saw 4 others (altimeter read 13400). Soon passed through mud town of Vilque & delayed by control station there. This area much cultivated and terraced on some slopes. Stopped in pasture at km. 42 for the night. Warmer here than at previous camps (altimeter 12500).

April 10, 1951 Warmer last night; some frost but no ice on windows - perhaps above 0°C. Talked with local man who said there were 3 kinds of owls here; *lucho* (big), *coico* (burrowing), & another - "familia lechuga". He also said there was a large & small kind of perdiz (tinamou), & that a man nearby had 3 chicks of the small kind. We departed 11:30 a.m. (speedometer 64582, at km. 42) and drove to Puno. Passed mud town with striking church at km. 34 and smaller town at km. 25. Many llamas, sheep, & cattle, but apparently no alpacas in this low country. The lake came in sight at about km. 7. Puno at edge of lake.

Journal

April 10, 1951

Puno, Peru

Streets mainly cobblestones. Two gas stations with pumps. Native women selling chuño & various kinds of potatoes, corn, grapes, etc. in square. Even oranges seen in store. Stores as well stocked (with food) as in Arequipa. Roofs either red or galvanized corrugated sheet metal. Town on a protected bay with narrow channel leading out into lake. Altimeter registered 12,200' (Lake 12500 on AAA map). Visited postoffice - nothing there for us. Looked up Mrs. Steining, 7th day adventist mentioned by Mrs. Heller. Pleasant English speaking lady. She put thru phone calls to Arequipa to inquire about my box of ammo (not there) and mail. Sent wire to Banetti at Callao asking about ammo & requesting send here. ^{Two} Free station expended papers on way out of town toward Slave, waiting about one hour. Camped about 8 miles toward Slave from Puno. Many mud & stone huts, grass-thatched, placed up on rugged rock hills, kind of cliff-dweller like. Saw 2 of the caracaras (like 943) walking near shore. Partially overcast all day. Lightning to east in evening. Warmest since leaving Arequipa - quite a few insects here. The little doves with short black tails common here as all the way from Arequipa. Saw 2 bright green lizards on edge road during day in damp areas. Many found hundreds of small toads near camp this morning & we saw many more on road approaching Puno. Flickers (?) common; size & action of flicker with near-white patch on rump & back; flicker flight & stance on ground. In open grassy areas & on stone walls.

April 11, 1951. Drove on to Slave. Road good dirt road, slightly corduroy. ^{Saw 10 ± glossy ibis at edge lake.} Just beyond Slave came to fork to Tacna (328) ^{Km.}, Desaguadero being straight ahead (96). ^{Km.} We took road toward Tacna. Slave

Journal

April 11, 1951 Heda. Pairumani, nr. Ilave, Depto. Puno, Peru.
river clear and about 75 yds. wide near Ilave. Road toward Tarma
good. 25 miles from fork came to hacienda in rolling green country.
Inquired + found Heda. Pairumani, where Pearson had stayed in 1946, was
next one. Several of the wicket-like hinds on ground near buildings. Road from
Ilave passed through rather flat grassy plain - quinoa, barley, pigs,
sheep, alpacas, llamas - sparsely populated. Hillside divided into
irregular plots by stone walls but no fences in flat country. About
30 miles from fork reached turnoff to Heda. Pairumani. Had to ford the
clear river, 150' wide, to reach houses. A several adobe buildings in cluster
near foot of hills in grassy region with occasional rock outcroppings.
Eduardo de Amat not present. The mayordomo was Jorge B
de Amat. He remembered Pearson, showed us the truck O.P. had sold them.
Very hospitable. Spoke no English. Gave us rolls + fresh cheese for lunch.
Showed us where Pearson had camped. Told us to ask for anything we
might need. Said there were tinamous, zorros, zorrenos, herons,
venados, here. Said he saw 6 herons at once in a field across
the road not long ago - they were large + long, he said. Conejos (Cava?)
were in field near house, he said. Deer sometimes in bunches of
20 or 30. Elevation here 3975 meters, said Amat. Light snow + hail-
storm in afternoon. Camped 1/4 mile W. of ranchhouse in grassy
field near stone walls. About 5 p.m. went down to river + caught 7
trout, 3 to 11", 2 rainbows + 5 golden brown, in 30 minutes - very fine
fishing. Set 16 snap traps + 6 live traps in grass + near rocks
in pasture where we were camped. At 7 p.m. no catch - gazing
in field may work against small mammals. Saw one Akodon
running in grass about 3 p.m. Wind died shortly after sunset. About
8 p.m. spent 1/2 hr. looking for mammals with light; found none.

P.p. 3

P.d. 4 (2 disc.)

A.j 4 (1 disc.)

A.b. 4 (3 disc.)
+ + p.m.

A.an. 4 p.m.

Journal

April 12, 1951.

Heda. Pairumani, nr. Hare, Depto. Puno, Peru

Snaptraps held 3 Akodon (1 discarded), adult + 2 young. Walked up a rocky canyon to W. of buildings + shot a small dove there. Saw no mammals nor sign. Whitewashed paint on ^{red} cliffs where hawks? had perched. Saw one Luscinia - like hawk (yesterday saw 2 marsh hawks at next hacienda to north). Many fringillids among rocks. Zenaidura macroura on rock walls near houses. Sunny morning, nearly clear, + warm in sunshine. Heavy frost last night. Certainly nights very damp. Many clear rindlets running through pastures toward river (wet meadows). Llamas + sheep + a few cattle in pastures here. Put up Akodon + bird. Saw occasional sparrow hawk. About 11 a.m. we left in jeep + drove 13 miles up road toward Mayorazgo. Road good + slight climb. Stopped on broad plane with very short grass where hundreds of llamas were grazing. There shot 3 Cavis + saw many more. I also shot a flicker + a sandpiper. About 5 miles up from Pairumani passed thru area of great outcroppings of conglomerate-like rock forming tall pillars with vertical sides. Several dark caves in rocks about 20 miles up from Pairumani came into area of low brush with cedar-like leaves. Returned to Heda. P. Set 6 Schuyler traps + 30 snap traps, 1 steel set in rocky canyon 1/2 mile WSW of ranch house. Two pairs of hawks came in to roost in evening - one pair black + white like my no. 943; + other grey above, white below, with black wing tips. Dark at 6 p.m. but not cold.

April 13, 1951 The 16 snaptraps near camp held 1 Phyllotis pictus. The 30 snaptraps in rocky canyon held 2 P. pictus, 4 P. darwini or asilae (2 discarded), 4 Akodon jelskii (1 discarded), 4 A. boliviensis (3 discarded). - 15 out of 30 traps. Spent day preparing specimens. Checked traps at 5 p.m. The string of 30

Journal

April 13, 1951

Hacienda Pairumani, nr. Ilave, Depto. Puno, ^{Peru}

held 4 Akodon amaenus and 1 A. boliviensis (discarded). Took up the 6 live traps near camp. Partly overcast during day but no rain. (Yesterday, about 5 miles up river from Hada. P., noted a ledge 15± feet above river with much whitewash on it; 2 hares (might ?-sized) perched on this ledge. Many trout visible in river at every point inspected.)

April 14, 1951 Rain for a few hours in early morning; light snow on hills 500' above camp. Nearly 16 traps held 1 Akodon boliviensis and 1 Phyllotis pictus. The string of 30 traps held 1 A. boliviensis, 1 Andinomys?, 3 Phyllotis darwini? Put up mice, discarding 1 A. b. and 1 P. d.
^{2 1/2 miles (from entrance Hada. P. rd.)}

We drove up road about 4 miles & I set 12 snaptraps & 2 steel traps on ledge of a cliff near road. Then visited another cliff on opposite side of river from ranch houses. There saw up to 5 flickers at once perched on the rock outcroppings. About 4 p.m. fished in river near crossing. Caught 10 trap trout, 9 to 14" long, in 30 minutes. Returned to trailer. Talked with Jorge for a while - he said there were perches in area where Pearson camped but we had to be there at 5 or 6 a.m. Hummers were among the rocks, he said. He mentioned a place where he had seen the chocolate & white rats (A. jelskii). I shot a brown [♀] hawk near crossing. Saw 3 luteo-like hawks there, white below with black wingtips. A lone frigatebird perched on a bar in the river. Fairly clear & cool in evening. Smelled skunk at place where set one steel trap today. Saw 5 of the green parakeets perched on a rock cliff near the road; voice screechy & ^{parrot-} ~~parrot~~ like.

April 15, 1951. Nearly 16 traps held 1 imm. (967-Akodon?). The 30 held 1 A. amaenus (discarded), 1 A. jelskii, 2 A. boliviensis (1 discarded),

Journal

April 15, 1951

Puno, Peru.
Hacienda Pairumoni, nr. Ilave, Dpto.

1 Phyllotis darwini? Twelve snap traps + 2 steel traps about 1 1/2 miles up road held 1 Andinomys?, 1 P. darwini (discarded). Saw 10 black-crowned night herons on cliff next to river - some had 2 long white streamers on head. ~~Set~~ Set 4 snap traps + 1 steel set near small cliff by river where saw tracks of small carnivore (skunk?). Returned to camp + put up mice. Took short drive in afternoon and shot young male duck (same kind as on April 8) for camp meat (swimming on stream). Saw 2 black & white hawked like my # 943) flying over river. Reinspected traps - first this morning had 2 A. boliviensis at 3 p.m. Rain & light snow in late afternoon.

April 16, 1951.

To Puno + return, Dpto. Puno, Peru.

Warmer than usual night + bright sunny morning. The close 16 snap traps held 2 Akodon boliviensis (discarded). The string of 30 traps held 1 Andinomys?, 1 Neotomys, 3 Akodon jelskii (2 discarded), 1 Phyllotis darwini or orilus, and 5 A. boliviensis (discarded). 4 traps near river held 1 A. boliviensis. 12 snap traps 1 1/2 miles up road held 1 P. darwini or orilus (discarded). One skunk in trap near river and another on ledge of cliff 1 1/2 miles up road. ~~About~~ About 9:30 a.m. departed for Puno. 30 miles to junction with Ilave-Desaguadero road, then 40 to Puno. Good dirt road. Saw 2 tinamous alongside road in flat bunch grass area 6 miles toward Puno from mouth of ^{head} road. Arrived Puno at noon. Visited with Mrs. Stening. Sent letters. Shopped for food. No mail or telegram for us at Puno. Heavy rain commenced about 4 p.m. Departed for Pairumoni about 5 p.m. + arrived 8 p.m. Apparently had rained much at Pairumoni. This morning saw 6 ducks on river near crossing. This a.m. left skunks in river to soak off scent.

Journal

April 17, 1951

Hacienda Pairumani, nr. Ilave, 13000 ft., Depto. Puno, Peru

Hail still on ground at points in trap line. Took up all traps except 2 steel sets. Fog this morning until 2:30 & grass very wet. 16 traps at camp held no mice. 30 snaps held 1 Phyllotis pictus, 1 P. darwini? 2 A. boliviensis (discarded). Other 8 traps (ledge of cliff, 2 1/2 miles up road) held nothing. Skinned P. pictus ♂ 977 & 2 Coryphomys ♀♀. No rain today.

April 18, 1951. Clear, sunny, & light frost in morning. Left Hda. P. about 8:30 a.m. Felis ♂ 980 in steel set 2 1/2 miles up road.

Drove to near Quellaoto where there was a pampas of 100 sq. miles or more with many llamas & alpacas grazing. Heard two-two burblings & saw mounds & holes. Set Macabee & Schuyler traps in & near these holes. Many shot a ♂ two and I shot 2 ♀♀ and 1 ♂. Traps caught none in 3 hrs. Then drove on pampas for 1/2 hour and shot 7 Cavia from car with .22. Saw the big plovers (white belly, large white wing patch) on pampas - a pair with 2 half-grown young. The black-tailed small doves fairly common in groups up to 7. Saw 1 burrowing owl on pampas; it bobbed while standing on ground after leaving hole, or vicinity of, in bank. Returned to Hda. Pairumani and prepared specimens. Overcast in afternoon but no rain.

April 19, 1951. A few thin cirrus clouds in morning. Skinned the Felis. Set 52 traps (5 Schuyler, rest snap) in rocky canyon 1/2 mile west of Hda. buildings, on slope 20 to 400' above canyon bottom, among rocks mixed with bunch grass and various bushes. Shot a quison while setting traps. No rain today though moderate overcast in afternoon. Moon nearly full.

Journal

April 20, 1951

Dpto. Puno, Peru.

Heda. Pairumani, 24 mi. S. Ilave, 13000 ft.

Trap line held 3 ~~Phyllotis~~ Phyllotis darwini or asilae, 3 Akodon bolivi-
ensis, 1 Neotomys ^{nearby}. Full moon, ^(uprising) & clear cold air last night may have
 influenced result. Collected one Lisalaemus & saw another on rocks of
 sidehill. Returned to camp & prepared specimens. In late aft-
 ernoon set 3 steel trap sets high in canyon where ^{snaps} traps set (took
 up first set in canyon).

April 21, 1951. Cold frosty morning but pleasant in sunshine.

The trap line held 2 Akodon jelskii (discarded 1), 1 Akodon amazonus,
 3 large Phyllotis (?), 1 medium sized Phyllotis, and one wildcat
 (in a set put out last evening). Prepared specimens. Visited
 rock outcroppings about 1 mile east of road opposite ranch
 buildings and set 3 steel traps, 6 Schuyler's, and 4 Sherman,
 and 20 snap traps. Steels & Schuyler's near large rocks
 & baited with mouse bodies and quison scent. No rain
 again today - river lowest yet seen.

April 22, 1951. Full moon, cold night. Clear morning. My

line of 50+ traps held 2 large Phyllotis ^{Took up these traps.} Traps set in rocks
 about 3 miles east of ranch buildings held 7 mice (Phyllotis 5,
Akodon 1, Neotomys 1). Discarded 2 young Phyllotis. Steel trap
 set in these rocks held wildcat - ♀ 992. A lone turkey vulture
 circled low over trailer at 11:20 a.m. Skinned 2 wildcats & mice.
 No rain or heavy overcast. Very dry.

April 23, 1951. Trap line remaining held 5 Phyllotis (all immature, dis-

carded), 1 A. boliviensis (immature, discarded), & 1 Neotomys. About
 8 a.m. drove 6 miles toward Ilave & back looking for
 tinamous but found none. Put up mice. Took up all
 traps. Clear warm day. About 3 p.m. departed with trailer

Journal

April 23, 1951

S. of Icare, Depto. Puno, Peru.

and drove 13 miles up the road to a pampas where we had collected tucos and Cavia. Camped near two burrows.

The large grey & white plover responds when I blow game call in the night. Clear cold night; moon a day or 2 past full.

April 24, 1951

Nr. Quillacoto, 35 mi. S. Icare, ^{Peru} Depto. Puno, n.

Cold & calm. Minimum temperature -12°C . last night. Heavy frost. Took a walk on pampas. ^{Sunrise 6:20 a.m.} Saw burrowing owls 7:10 a.m.

Guinea pig out of hole at 7:15. Heard burblings of tucos underground at 7:30. At 7:50 saw 10 tucos out of holes.

~~A~~ An Indian woman told me that Quillacoto was farther on - this place called San Antonio de ?. Found grass nest with 2 blue eggs, finely dotted, especially near large end. Nest in center of isolated clump grass. Sparrow-sized gray bird, darker on back, light supercilious line, was the occupant. I found similar nest with 2 eggs on trap line 3 mi. E. of houses at Hedd. P. on April 21 (attached to rock, $1\frac{1}{2}$ ' above ground, at edge thick bunch grass). One egg hatched during day but Indians near nest kept adult off & young died. Shot a white bellied plover-like bird with quail-like bill. It ran on ground a great deal. Back tinamou color & design. Flew plover-like. On ground appeared dove-like. Shot Carpodacus-sized finch near the nest. We departed 10:20 a.m. and drove on to Mazacruy (12 miles). Maps at control station showed Pastor Grande (where said to be rheas) on Santa Rosa road beyond S.R. Yesterday met Mr. Steining & 2 other adventurers on road. They had been 114 km. off road into the sierra (thru S.R. & evidently Caccachera). Said (Duffy?) they saw 147 vicuñas

Journal

April 24, 1951

14000'
Nr. Santa Rosa, Dpto. Puno, Perú.

and 10 condors in the sierra. There was supposed to be gasoline 4 km. beyond San Mayocruz - found none in that distance on Tarata road so came back toward Mayocruz & took road to Santa Rosa. Road narrow, rutted, often rocky. Four miles from main road saw 2 large tinamous in tola - bunch grass gentle slope. (Earlier today, about 3 miles N. of Mayocruz, caught a 56 gram baby tinamou on road - it could fly but poorly & hid by freezing on ground under a bush.). We reached Santa Rosa, 11 miles ^{on the} ~~from~~ side road, about 3 p.m. Small mud town on 15' wide clear river. Rocks, tola, bunch grass slopes. Continued on 2 miles to a high point in road near large brown rock outcroppings. Fine view of the sierra crest to east and some peaks (snow on west side) to west. Camped on tola, thorn bush, ~~so~~ bunch grass flat. ^{On} the rocky slopes grew ^{large} bushes with red deciduous bark (manzanita-like) and small tough leaves - probably Palylepis (spell?) which Pearson mentioned. Set 20 snap traps at edge rock outcropping near camp. Llamas & other stock had used the area much as evidenced by droppings and browsed grass. None present now. Cold wind at sunset (about 5:30 p.m.). Altimeter 14000'.

Short distance up S.R. road saw flock of 15± of the big plovers.

April 25, 1951 The snap traps held 1 large Phyllotis (14000'), and 1 bird. Put up these. Put out 2 steel sets. Set 15 snap traps in sandy area where ^{clumps of} ~~bunch grass~~ grass & tola formed open cover. Set a line of 29 snap traps, about half in grass & rocks along stream and others in grass &

Journal.

April 25, 1951

2 mi. W. Santa Rosa, 14000 ft., Depto. Puno, Perú.

rocks on steep slope ascending from stream (some Polylepis bushes present). About 4 p.m. flushed 4 of the large tinamous from 2' high tola on ridge near road. Clear calm night.

About 4 p.m. a fox was in one steel set (in sand & tola); killed. One Akodon berlepschii.

April 26, 1951.

1 in snare trap in tola & bunch grass in afternoon. Another seen ^{on} sandy ground in open stand tola.

April 26, 1951. First 20 traps held large Phyllotis. The 15 in sand held 1 Akodon (berlepschii?). The 25 traps held 3 Akodon jelskii, 1 A. berlepschii, 3 A. darwini(?) (young?), and 2 A. boliviensis. Discarded 15 gm. A. berlepschii, imm. 29 gm. A. jelskii, adult ♀ 30 gm. A. jelskii, 3 imm. ♀ A. darwini (or oulet), and 1 A. boliviensis. Mary K. put up 1 A. jelskii, 1 A. boliviensis, and 1 Phyllotis darwini of my catch. I put up 2 A. berlepschii & Dussumyia. Picked up all traps. At 1:30 p.m. the 35 traps near camp held 3 A. berlepschii and one bird (rufous wren-like ground & rock bird). Traps by river held nothing. Saw one viscacha atop cliff overlooking river - only one I have seen at this camp although ~~many~~ viscacha-like droppings atop rocks. We departed about 4:30 p.m. Thunder, lightning, & light snow in afternoon. Rain below Santa Rosa. Camped at stream about 6 miles from Mayocruz - Tarata road. Local man said Pacho Grande about 30 km., Paccachara 50 km., and Valcan Tutupaca 100 km. up the road, & no other road. He said rheas (Andean) sometimes seen at Pacho Grande, & that road better beyond point of camp (probably could make with trailer). He described a quinn well & said there were some.

Journal

April 26, 1951

Santa Rosa, 14000 ft., Dpto. Puno, Peru.

on other (N) side of river. Said also shunka, cats, + vicuñas here, 1 kind snake (damp places, alajo), 3 kinds leguños (based on color). Some trout, but few, in river, said man. He + boy glad to get discarded tin cans

April 27, 1951 Departed 10 a.m. Snow (new) on hills at about 14000' level. Sunny + warm. Drove to Moyocruz (La carrettera 10.4 miles from Santa Rosa). Purchased supplies. Got gasoline near a bridge 5 miles toward Tarata from Moyocruz. Mileage 068 at Moyocruz. Eleven miles toward Tarata picked up dead Coreopatus on road. At miles 102 saw 2 vicuñas at about 13700' elev. in flat ^{area} of short tula. At miles 105 saw 15 ± quinea pigs in + near rock retaining wall on lower side of road. Many alpacas + llamas in wet ~~low~~ meadows here. At miles 107, about 14200' elev., saw Polylepis large shrubs growing among red rocks. Saw over 40 more vicuñas before ~~camping~~ camping. After crossing a broad grassy flat (about km 175 north from Tacna), descended ~~thru~~ through a rocky area along a fine clear stream (draining southward) and saw many vicuñas - several ran across road in front of car; many shot one for dinner. Tacna - Puno line at km. 172. ^{Chapallaca} Soon thereafter reached Tacna control station. They keep weather record there of maximum + minimum daily temperatures, wet bulb readings, + precipitation. Drove on - and up a long grade - toward Lince. Camped short of summit (Lince) at 15300' near 150 ^{Km.} ~~thru~~

Journal

April 27, 1951

W E. of Tarata, Dpto. Tacna, Perú.

mark. soon stepped into two burrows in sand, pushing through from surface. set 6 Sherman traps near grass clumps + shrubs in sand + put 1 Mochee in two burrow.

Cold night but calm. Could see big dryer (Ursa major) inverted + a short distance above northern horizon. at

Challapalca

Challapalca a small river flows ^{south-}ward toward Chile (Rio Maure) (~~spelling?~~).

April 28, 1951. Foxes consumed remains of viscacha 50' from trailer at night. Minimum temperature - 5°C. Took short walk near rock slides + saw several viscachas. Also saw 1 vicuña 1/2 mile up canyon to east. Drove toward Tarata Livina (nothing there) about 1 mile, elev. 15450 by altimeter. The country became less vegetated. Descended 3+ miles to a small stream + saw 14 vicuñas there. Continued on up a grade to a 15,300' summit 10 miles from camp. Much yerba, hard + green, but little tall or grass. Road descended beyond this point so returned to camp area to trace. In a short walk shot 2 ^{gtagis} ~~huanaco~~. Overcast; occasional snow flakes.

April 29, 1951. Mary had 22 traps out + 2 65; total catch 1 Chinchilla Chinchilla. So shot 3 viscachas for meat + put up one ♂. Viscachas not numerous here. Put up the chinchilla. Set 2 steel traps in two burrows; Mary set 10 Mochees in two burrows. During day there was plugging action in 4 of the burrows but animals not caught. I set 20 additional snap + Schuyler traps, baiting with meat, and 4 single steel sets. In evening saw about 10 vicuñas 1/2 mile SE of camp. Light snow

Journal

April 29, 1951 15300'
 Livine, 29 miles NE Tarata, Dpto. Tacna, Peru.
 in morning. Usual cold wind about 5 p.m., dying shortly
 after sunset.

April 30, 1951. Colder than usual last night. Fore-scaped with steel
 traps near camp; rope holding drag was brittle when frozen.
 Mice frozen hard in traps. Catch 2 Phyllotis boliviensis, 1
Akodon andinus, + 1 Phyllotis darwini. Put up these mice. No
 catch in 15 traps baited with mouse meat. Saw 9 vicuñas
 on slope above camp in morning. Clear day with cold winds.
 Took up first 20 snap traps + set 25 additional at
 end line (so 90 out + many's 30+). Twice during day
 flushed snipe-like bird from low grass near camp.
 Took picture (Kodachrome) of camp area. Evening cold + clear.

Ctenomys to filled some of burrows in which we had
 Macabee or steel traps but caught none. Most of my
 25 new snap traps set ^{on} in damp slope among tall
 (2') soft grass. Many pale-straw colored Nestans-
 sized droppings there, perhaps all old (Alrocoma?).

May 1, 1951. My traps held 1 Phyllotis darwini. Many caught one
Ctenomys. 8° below 0°C. last night. We put up our animals +
 in afternoon headed toward Alave. The control station ^{was} 12 miles from
 camp. A man there said the avestucos were at Chillicules, a pampas
 near next bridge to N. Young appeared in January, he said. Two other
 men agree that the sick sick rhinos were there but "many seasons".
 The red mountain near which we camped was Cerro Antojave.
 Men said coldest months June + July. We drove on to Chillicules,
 5 miles from control area. This was the 17400' pampas just above
 rock canyon with many ^{viscachas} ~~viscachas~~. Cold wind; saw but one vis-

Journal

May 1, 1951.

W. Dpto. Puno, Peru.

cacha. Rocks here perhaps good for trapping. We pushed on. Saw no rheas but hundreds of llamas + alpacas. Saw 75 vicuñas in 5 miles beyond (toward Mayocruz) bridge. Continued on until about 1 mile before the pampas of Llasta. Then camped near 10' wide clear stream (bridge). The stream entered canyon of red rock cliffs about 100 yds. to west of road. Set 25 snap traps, 11 near old tree burrow on tola + bunch grass flat (corroches) near road + stream, the others at border of rocks + tola or streamside area. Caught 1 Akodon ^{amazonicus} ~~amazonicus~~ in trap before 8 p.m. Clear cold night, calm starting 2+ hours after sunset. Camp at 13500', 20 miles from Challapalca central station.

May 2, 1951. Snap traps held 1 Akodon jelskii, 1 Phyllotis pictus, & 1 Phyllotis boliviensis. Many llamas grazed nearby. Left traps out until 10:30 a.m. + by that time had additional A. jelskii + 2 A. amaenae. Put up mice + departed about 1 p.m. for Heda. Paicamani. Stopped for 1/2 hr. near Paicamani + caught 8 trout for dinner. Found no Anats at the Heda. but we camped near the ranch buildings. On Llasta pampas saw one band of vicuñas + a pair of Andean geese. Mayocruz was 42 miles from Challapalca, 22 miles from Llasta.

May 3, 1951. Departed 8:15 a.m. from Paicamani, with jeep + family, for Mt. Paro Grande. Passed at the ^(lv. 9:45 a.m.) cantina, a few miles past ^{Mayocruz} ~~Mayocruz~~, then went to Santa Rosa (4. (45 minutes from Mayocruz). 7.3 miles on from S. R. encountered remains abandoned buildings when apparently had once been mines. Encountered the green cushions of yareta 1.3 miles further on. Arrived at a 15000 ft.

Journal

May 3, 1951.

Nr. Lake Luriscota, Dpto. Puno, Peru

plateau 10.6 miles from S.R. Saw Lago Luriscota in the distance on same level. About 6 miles further on we were near the lake shore and saw that it was bordered by about 4000 flamingoes; ducks, shorebirds, & a few black & white geese also present. Herds alpacas & llamas. Saw bands vicuñas many times. Saw tracks of rhea alongside road near lake. A separated $\frac{1}{4}$ mile long part of lake had about 200 of the common cinnamon-breasted ducks & the plain contracted, then widened again - perhaps ²⁻³ miles wide. 15 miles beyond first rocky plain saw 50 \pm vicuñas ^{& near} on a 45° slope of red boulders & yerba above short green-grass plain. Snow topped rocky peaks surrounded the plain. Occasional hard sheep. Few houses. About 3 miles beyond viscacha place came to 1 mile long lake with 500 \pm flamingoes. Tutupaca volcano ahead of us. Inquired & found we were on road to a mine beyond volcano & that road to Casachara turned off many km. back. Turned back & lunched at viscacha place. Became aware of diurnal mice among the rocks & near holes under hand-sized rocks on the grassy ground below foot of viscacha rocks. Shot 6 of these and saw a dozen in 15 minutes - probably 30 or more per acre near the road. Small stream here. Continued on back looking for Casachara road & finally found it, only about 1 mile out on plain from point where first reached from S.R. Road went off to west & was

Journal

May 3, 1951

Nr. Lgo. Lorisicota, Dpto. Puno, Peru.

rough compared to good road on plain. Crossed one stream, ascended, & descended to another stream (5 miles from start of road). Camped there at 15300'. Cold calm night. Mary + I & 3 kids slept in 2 man mountain tent.

May 4, 1951. Sammie hit us at 6:30 a.m. Before that heard several tinamous(?) calling on hillside - chaw - chew - chaw - chew - etc., on notes la - sol - la - sol, each note slurring down. I walked toward sounds 1/2 mile away & they stopped, then started 200 yds. further up slope & 1/4 mile from me. Saw 2 vicunas. Saw ~~at~~ rhea tracks on the frosty ground. The tinamous also made a fluttering sound reminiscent of Mt. Quail. Flushed 2 bunches 6± snipe. Saw bullfrog - sized tadpole in clear stream 6' wide. Drove on toward Cacachara. 5.6 miles on, road being rough but not climbing, saw 3 adult condors soaring down gentle canyon. About 3 miles further on crossed 15' wide clear river of gentle slope, the place being Cacachara. High rock peaks close by on right side, where O. Pearson studied in 1946. Elev. here 15200 by altimeter. Continued ^{up} on past meadows in barren area to a summit, ^{about} ~~10.7~~ ^{11.3} miles from camp & ~~15.4~~ ¹⁶ miles from turnoff from Tutupaca road. Elev. 15700. Saw one band 16 vicunas & another of 43. Shot one of a pair of ^{Attagis} ~~tinamous~~ on road (071028). The other stayed on ground after first shot & allowed approach to 50'; then flew, wings very straight out & vibrating through small arc, squealsing. We drove

Journal

May 4, 1951

To. Heda. Paicamani, Dpto. Puno, Peruv.

down into another canyon where stream drained opposite from Cacachara (crossed continental divide) and came to a mine, $\frac{1}{2}$ miles beyond summit, at elev. 15450 ft. Mine was of zinc. Talked with 3 men. They said no bats. I couldn't ~~remember~~ ^{remember} long name of mine & river long enough to write them down. We left mine & drove to Cacachara (elev. 15100 this time), left there 12:30 p.m. Light snow commenced. Continued on down to Santa Rosa, Mayocruz, & Paicamani. Took about $4\frac{1}{2}$ hrs. from Cacachara to Paicamani including a few stops & no hurry. Some rain at night. Tutupaca road was 13 miles from Cacachara. Paicamani elev. was 12920 (-950 on departure, & -880 next a.m., with barometer setting 30.06). Mayocruz about 21 miles from junction Tutupaca & ~~the~~ Cacachara roads. The plain around Lake Loricota, & Pato Grande, most interesting area we have encountered & possible site for future work. Probably could get there with trails - 2 narrow sided spots & one sharp steep turn above Santa Rosa.

May 5, 1951.

To Ilave, Dpto. Puno, Peruv.

Overcast; occasional sprinkles. Snow on ground at about 13500' level. Put up Phyllotis & tinamou, packed some specimens, & drove to Ilave. Picked up mail & groceries. Camped by the river near bridge. Ilave prices same or better than Puno - 3/11 for 1 lb. can Klam, 2⁵⁰ for canned milk (Isoria). Today about 5 miles toward Ilave from Paicamani flushed about 20 flickers from ^{tall} grass flat field near road with car. May 3 flushed similar

Journal

May 5, 1951

To Ilave, Dpto. Puno, Perú.

group near Paucamarca. Where there were road cuts between Moquegua & Ilave, always flushed a few - up to 10 - yellow finches from holes near tops of banks.

May 6, 1951 Sunday

To Puno & Ilica, Dpto. Puno, Perú.

Snow on hills slightly above level of Ilave. Clear day. We drove to Puno. Many people in Sunday best walking toward Ilave & other towns with things to sell. Got some mail at Puno. My box of ammunition had not arrived. We drove on $45 \pm$ km. to Ilica.

Halfway there saw 7 of the brown caracaras, probably juveniles of the black & white one, on ~~road~~^{adobe} wall at edge grass field. Most of country near road flat & often wet, but some hills with rock outcroppings & stone walls. at Ilica parked trailer in yard of the

Clínica Americana, adventist clinic where David Duffey was the doctor. He was interested in birds especially ^{was familiar with} ~~know~~ many of the local kinds but not their scientific names. He said that the Tutupaca road ^{went to} ~~ended at~~ Condorave & that it was possible to drive ^(named Hartman) on down to Moquegua from there. Some friends of Duffey had seen many vicuñas on road from Nazca to Cuzco. To Puno, Perú

May 7, 1951. Drove from Ilica to Puno to see about getting permits. Saw flock of $50 \pm$ glossy ibises at one point and 3 herring gulls at once at another point. The "sentinela", the big plover, in flocks of $10 \pm$. Went to Prefectura. Secured letter from prefect to officials of Dpto. Puno so as to help me get around with facility. Left passports for work on permit application. Had lunch with Mrs. Steining. Met ~~man~~ man who had visited San Antonio de Equilache. He said trip was 90 km., turnoff 2 & miles up Arequipa road from Puno, & that he saw vicuñas & vicachas

Journal

May 7, 1951

Puno, Peru

along the road, the vicuña starting on a pampar at 20[±] km. before S.A. de C. Trip down made in 4 hours in pickup, he said. Returned to Juliaca for night.

May 8, 1951 Drove to Puno for further papers of application for carnet. This took all day. Shopped some. Returned to Juliaca for night. Shot one andean gull (♀ 1029). Saw the usual hurrawing owls & caracaras along road. Duffy tells me he has heard that flamingoes ^{nest} on islands in Lake Titicaca.

May 9, 1951

To Hda. Colacala, Mr. Putino, Dept. Puno, Peru.

Bought supplies (milk $\frac{5}{100}$ per case at C.A.) and had car greased, then started for Hda. Colacala about 11 a.m. Road crossed broad slow flowing clear tributaries to Lake T. Near Toraca saw 2 Turkey vultures. Many mud houses, & clusters of small houses with pyramidal roofs of adobe bricks - perhaps some sort of drying houses. Saw 100[±] glassy ibis in flat marshy area near Toraca. 32.5 miles from C.A. in (shortly before Huguacane) Juliaca, turned north on Putino road. Road of large rocks which made travel rough. Fairly heavy cultivation. Road ascended little. After 12 miles on this road turned off to west on road to Colacala. This was green grassy rolling country. After 12.3 miles on this road arrived at the Hda. A stone wall 4 to 6 feet high enclosed much of the pasture. 100[±] ^{slanted ornamental} trees up to 25' 25' high & 12" diam. were near the hacienda headquarters, and there were more than a dozen Eucalyptus up to 50 feet high. Headquarters a short distance up grassy foothills. Hilltops above.

Journal

May 9, 1951

Calacala,
Hoda. ~~Calacala~~ ^{Calacala} nr. Putina, Dpto. Puno, Perú.

also appeared grassy. Elev. 13100 by altimeter (12500 at Juliaca); possibly then 100 or 200 feet higher than Paicamani. Many vicuñas in enclosure near houses & others on hills above. Señora Paredes greeted us & served us refreshments until Sr. Francisco Paredes ^{Perez} ~~Perez~~ arrived. All very hospitable, served us dinner, & offered use of a room in the house. A llama team arrived with potatoes and stacked them in a rock-floored corral with straw on top to prevent freezing. These were to be made into chuño. Talked much of vicuñas with Paredes. He also had several standard Conicole sheep; the vicuñas were sort of a hobby. He & wife said they had seen comadreja (weasels) here, not long ago. ~~Francisco~~ Francisco Paredes Pérez is correct name. Dra. P. said cat here gray & black & different from those I got at Hoda. Paicamani, also that there was a skunk here with one white stripe, not 2 as in my Compsatus. ~~She also~~

May 10, 1951. Calacala is ^{Aymara} ~~Quechua~~ word for rock. Paredes assigned his "chofer" to show me the vicuñas. Saw these and some hybrids with llamas & alpacas. Saw 20 ± viscachas on rocky hill 1/2 mile from the houses (caseros) & shot a young male. Flushed one of the large ^(Nothoprocta) tinamous (700 gms.) from tall grass on slope. Set 30 snap traps, ~~2~~ 2 Schuylers, & 6 Shermans in garden. Set 1 steel trap near bushes & rock wall where Mrs. P. said 3 young cats had been seen. Set 10 snaps & 2 Schuylers in tall grass & near rock wall in pasture near house. Large passageways & rat-sized light

Journal

Peru.

May 10, 1951 Heda. Calacala, nr. Putina, Dpto. Puno,
 ten droppings in tall grass - the boy said "conejos." Mrs.
 P. said there were conejos nearby but I saw none. She knew
 the trees as "topo" - Mr. P. said none here. Dr. P. showed us
 a large blanket made of the hide of young vicuñas
 and another made of hide of foxes. He claimed to have
 many losses from foxes & was fascinated with my steel
 traps. Looked at some snap traps about 8 p.m. (new
 moon) and found 2 Phyllotis, brown in color with long
 tails. Zonotrichia capensis common here; shot one. Dove
 common near houses - one with orange ^{naked} skin around eye, other
 with short black tail. The boy showed me dried Andean
 goose which he had shot near houses some time ago. I
 saw sparrow hawk & caracaras several times during
 day. Pito ~~rocks~~ ~~are~~ not seen but doubtless present.
 Saw a pair of "pitolechos" in eucalyptus near house;
 a kind of Falco (got one May 11). It is said to eat
 the pitos. Dr. Paredes showed us 20± flat skins of
 rodents which he had taken in looking for chinchillas.
 Most were of gray long-haired rat with short
 tail; probably Abrocoma. One was Chinchilla. These
 taken in various parts, not necessarily nearby, but
 all in Peru.

May 11, 1951. Two Phyllotis in snap traps in pasture,
 2 in traps in garden, 1 A. boliviensis (imm., discarded)
 in garden, large A. boliviensis trapped in house by
 Mrs. P., 1 P. + 1 A. b. in Sherman traps, & Cone-
patus in the one steel set. Shot a falcon (pito-

Journal

May 11, 1951

13000 ft.
Hda. Calacala, Dpto. Puno, Perú

(lucho) in yard in eucalyptus tree; another flew from nearby perch. Sr. P. assigned the boy to help me set traps & to show me the "bosque" about 3 km. away. Clear sunny day; probably did not freeze last night. Shot one of 3 tinamous flushed at once in tall grass near houses on gentle slope; this a young of the 700 gm. kind, wt. 175 gms. but flying (discarded). Discarded 2 young Ahodon boliviensis and one ♀ of smaller Phyllotis; put up other mice. Shot & examined traps & found another A. boliviensis during the day. Yesterday shot at a ham and in tree in yard & wounded it but did not recover it. Many animal pellets beneath that and another Eucalyptus. Set 20 snap traps on rocky hillside (vicacha area) 1/2 mile W. of houses & 1 steel trap in field below garden. Sr. Paredes gave me skin of young weasel which an Indian had taken here about 2 months ago. He & Sr. said there was a larger one, white below, & vicuña color above here. Indians used weasels to dance with. He said he had caught a bat in yard about 2 years ago.

May 12, 1951. Caught 1 large Phyllotis in hillside traps, small one in pasture near houses, same kind in live traps in garden, & 2 smaller of same in garden. Discarded last 3 (♂ 29 gms., ♂ 21 gms., ♀ 21 gms. - brown Phyllotis with buffy faint line on center chest. Another brown ♂ Phyllotis found in trap among rocks & grass on hillside before dark. Put out another steel set. Prepared specimens. In morning Paredes had his men drive many of the vicuñas into stone corral with 8' high walls & he showed us some 3/4 vicuña-1/4 alpaca crosser & 3/4 v. & 1/4 llama crosser. He then left for Juliaca to spend several days. So body

Journal

May 12, 1951.

Heda. Calacala, Dpto. Puno, Perú

part of the day today. Paredes says ~~for~~ kill his sheep & vicuñas; he borrowed traps to have some made. ~~Sparrow~~ hawk is called "cernicula" or similar sound-ing name. The caracara called "agui-la" or "gallin-azo." Sparrows "gorrionitos"

May 13, 1951 Sunday. Clear & sunny. One steel trap sprung & other held a dog. 20 snap traps on rocky hillside held 1 large brown Phyllotis, 10 in pasture near rock wall held 1 sm. Phyllotis, & 30 in garden held 2 of smaller P. The large P. (like 071041) had nipples $2\frac{1}{2}$ mm., much lactated tissue, but no embryo or scars (uterine horn 30×1 mm.); wt. 45 gms (discarded). A smaller P. (~~like~~) weighed 24 gms.; no emb.; ut. horn $20 \times 1\frac{1}{2}$; no ut. scars; vulva perf. (like ♀ 1040). Another ♀ same wt. & sexual condition (back sun. but sexual development commenced?). Discarded all mooses caught. Again looked at vicuñas in pasture; one tame enough to be petted. Saw one snipe & 2 young tinamous. Shot 190 gram young tinamou (700 gm. kind); too badly damaged to be sexed or preserved. Clouded up about 10 a.m. Falares common in yard here. In afternoon walked to the "bosque" $1\frac{1}{2}$ hrs. to north. This was steep slope on right of canyon with trees up to 15' high. Had to start back before reaching the trees. Shot a small brown thrasher. Flushed 8 of large variety of tinamous from grassy moderate slopes on this trip, only one surely adult. Set 12 additional snap traps near stone walls & grass near houses. Clear still night. Saw dark marsh hawk near houses at midday. Dra. Paredes told us several stories of adventures with weapons around the house. She shot flicker for me with ^{rifle}.

Journal

May 14, 1951

Hcda. Calacala, Dpto. Puno, Per. 13000 ft.

Young tinamon shot yesterday had 20 beetles, some still alive, in crop, the beetles similar to those found in previous large tinamon & saved. The 12 new traps held 2 of the large brown Phyllotis (darwini?) and imm. of small P. 25 on rocky hill 1/2 mile E. houses held 1 imm. Akodon boliviensis (11 gm. ♂) and 1 Phyllotis ^{hyperomys}. 30 traps in garden held 1 of large brown Phyllotis + 3 of small brown P. Dra. Paredez showed me 2 nests of a mostly black (+ yellow) leucist. sized finch under the eaves of the house; both nests had 3 half-feathered young. a turkey vulture was sitting at discarded skunk carcass at 1:30 p.m. The discarded large brown Phyllotis (darwini?) consisted of ♂, 48 gms., tot. l. 245, test 11x8; and ♀, 54 gms., tot. l. 265, nipples 3 mm., no emb., ^{eggs} ~~eggs~~ ^{eggs} ~~eggs~~. Discarded 4 of smaller Phyllotis (orelae?). ♂, 29 gms., tot. l. 218, testes abdominal, 3x5 mm.; ♀ imm., 19 gms., tot. length 185; ♀, 26 gms., emb. 3R, 1L. horn uterus, C-R 10 mm.; ♀, 26 gms., ~~tot. length 185~~ emb. 1R, 2L. horn, C-R .5 mm. ^{TO nr. Ayaviri}

May 15, 1951. Drove to Juliaca, leaving ^{trailer} ~~jeep~~ at Calacala. Saw many glossy ibis in marshy area and several grebes in water. at Juliaca family got second tifus exanthematicus shot. Lunched with Dr. & Dra. Duffie. Then drove toward Chuguibambilla. Camped several miles NW of Ayaviri near train tracks.

TO La Raya & Ayaviri

May 16, 1951. Calm frosty cold night. We drove on to Chuguibambilla where the Ministerio de Agricultura has a Granja Modelo. No vicuñas or alpacas there, only sheep & cattle, so we drove on to La Raya (about 35 miles more on rough road) where a branch of the Granja located. There saw fenced pasture with 40± vicuñas + 100± white alpacas. Only

Journal

May 16, 1951

La Raya, Dpto. Puno, Peru.

one man stationed there and he had little information. La Raya is high point on road to Cuzco (4314 mts). Steep grassy & rocky slopes on both sides, & mountain tops snow-covered. Glacier-like mass of ice on or near by peak. The man in residence said puma had killed several vicuñas; that foxes & cats present; tinamous there. He said many wild vicuñas over ^{high} ridges away from La R., a day's trip by horse. He said condors occasionally seen. I saw several ducks on pond. We drove back to Chuguitambilla. Santa Rosa apparently a wool center; about 100 llamas entering town, each ~~carrying~~ ^{carrying} two large sacs which appeared to be filled with wool. Near Chuguitambilla saw 20± Andean ^{quise} ~~quise~~ in meadow near pond. Talked with the director at Chug. - ; rather young & seemed to know his business but handicapped for lack of funds and personnel. The goat farm had wire mesh & barbed wire fence with steel posts - best fence we have seen in Peru. The Granja appeared run down & parts of it vacant. Land had little stock & much grass in comparison with surrounding areas. We drove on & camped just outside of Ayaviri.

May 17, 1951

To Lake Aricoma, nr. Crucero, Dpto. Puno

Bought supplies in Ayaviri (poorer than Juliaca), then took road toward Tlapata & turned off to Asillo before reaching T. Shortly before Asillo passed lake with 100+ ducks, 50+ coots, the coats of 2 birds, one with yellow frontal shield continuing up from bill & orange legs, other with only partial shield (diff. sexes?). Asillo had young vicuña tied in Plaza. A short way toward San Anton stopped for water & met Pascual Maceno Valarquez, a well dressed

Journal

May 17, 1951 To Aricoma, nr. Crucero, Dpto. Puno, Perú
 veterinarian. After conversation he invited us to lunch but we
 refused; he lives in Asillo. He recommended Maucane as a good
 place to study auguénidos because all kinds including huarijos,
 suris, & huanaos there, good road, & people to help in work.
 We drove on up gentle grade along Rio Carabaya, very
 clear with many trout, about 50 feet wide. 4 miles
 before Rosario at elev. 13350', met first vicuñas (14), in
 grassy hilly country. A little beyond Rosario (road to Maucane
 2 miles beyond, Mac. said to be 45 km. from Rosario), passed
 a fine pond with coots and red-faced gallinules (?) or
 young. River remained large & road good. Passed along a
 flat plain 3 or 4 miles wide. ^{13600'} Crucero 17.4 miles beyond Ros-
 ario, a fair sized town with stores & plaza & many Indians. This
 an alpaca raising area. ^{met a} ^{15.5} Passed large lake 15.5 miles beyond
 Crucero; this later proved to be Aricoma on the road from
 Crucero to Limbani; lake 15000'. Saw vicuñas and huallatas
 there. Foot of lake had nice stream running out & was lost
 ed in short grass rolling hill area. ^{Lake 5 1/2 miles long.} Head of lake abutted
 against rocky, snow-clad, & glacier capped rugged
 peaks. Some cattle, sheep, & alpacas near lake, & one
 habitation. ^{13600'} Continued on to summit of road, 23 miles
 from Crucero. Upper part of road wet & rough in parts but
 would be passable to trailer. As getting dark so drove
 back toward Crucero & camped at 14000 ft. near a
 stream. Clear cold night as usual. Lake Aricoma the
 most striking mountain scenery we have yet encountered
 in Perú, but head, much shaded & perpetually icy.

Journal

May 18, 1951

To Poto & Heda. Calacala, Dpto. Puno, Peru.

Drove toward Crucero to unmarked fork to Poto (about 5 miles from Crucero, 18 from summit of road). Saw occasional vicuña near the river near road toward Poto. Road ascended to 14000 feet but slight grade; poorer than road to Limban. Shot young tin-
Thinocorus (#1047)
mouse-like bird & saw 2 smaller young. Shot one of pair of
hualلاتas & saw others. 19 miles from Limban - Poto fork
(so called because sound like instrument of that name)
saw 2 of the "bandurrias" feeding on short grass flat. Head
& neck orange brown, pink legs, dark gray wings, ibis
size & bill (Bra. P. & Dr. Duffie said there said by Indians
to have many lice). 25.1 miles from fork met Sandia
road, much more traveled & in better condition than Crucero to
this point. Then saw more vicuña & geese than at on
any previous parts of this trip. About 10 miles beyond Sandia
fork took side road east for 2.6 miles to a group of old build-
ings, apparently long ago the caserio of some hacienda. Only a
few Indians there; they said road went on to a mine now little
used. Returned to highway & on to ^{fork (14900')} road to Ananea or Poto,
this fork 15.4 miles from Sandia Fork. Drove 3 miles along well-
traveled road to small group stores & houses of the village of Poto.
Bought gasoline. Drove about 4 miles up a road to a muddy
but large lake on 15500 ft. plain. About 5 flamingoes in
lake and 40+ vicuña & some geese on plain. Shot much-
grazed grass & many alpacas. Fine far view of glacier-
capped Nevado Ninacuyo & others. Saw several vicuñas
along road in rock piles & walls near old mining sites.
Poto town at 15100. Then drove back to ^{main} road & to
Pustina (35 miles from fork). Highest point on road was

Journal

May 18, 1951

To Hoda. Calacala, nr. Putina,

15150 feet in rolling grassy country \pm 7 miles from Pato fork. Much of road down was rough. Much wider & smoother several miles before reaching Putina. Arrived at Calacala after 10 p.m. Clear cold night as usual.

May 19, 1951. Clear warm day. Wrote notes, cleaned gear,

& recovered from long drive yesterday. Dra. P. said many waterbirds near Chupa including bandurrias, cuervos (the glossy ibis), grebes (chocas & another). She said trout had displaced the "hodas" (spelling), a rich fish in the lake which had much better meat than trout. In late afternoon

^{Paredes}
~~Paredes~~ returned with his ^{brother-in-law} ~~son-in-law~~ who spoke fair English. With his help got more vicuña information.

May 20, 1951. Shot a wren, dove, & sparrow & put up some.

More talk with Paredes & ~~son~~ ^{brother-in-law} in law. Fleshed skunk skin.

Nearly full moon. Set no traps.

May 21, 1951. Worked on car. Paredes showed ~~us~~ ^{his} paco-vicuñas, alpacas, & huacujos. Clear warm day. Saw a turkey vulture a few times. In evening viewed paco-vicuñas and vicuñas.

Prepared to depart. Dra. Paredes gave us sachapata, sach quinoa, & a whole cheese.

To nr. Asillo, Dpto. Puno, Peru

May 22, 1951 Departed with trailer about 8 a.m. and drove to near Huancané, thence to Toraco, & took ~~road~~ ^{road} from Sema to Ayangaro. This road 36 miles. Soon after leaving Sema passed lake with 100 \pm flamingoes. Passed close to head of Lake Arapa, comparatively deep & blue. Thus far road poor because of ruts & holes. Then climbed over hills & down to a higher plain where road fairly good. Asillo junction

Journal

May 22, 1951

To nr. Asillo, Dpto. Puno, Peru.

16 miles from Arengaro. Again met Pascual Maceno Velasquez at bridge beyond Asillo toward Cuzco. Camped alongside road at 13000 ft. Between Huancane + ^{Taraco} ~~Taraco~~ saw 5 bandurrias; they seemed considerably larger than the numerous glossy ibises. Saw a pair of stilts (?) with white head, neck, & body but black wings in marsh near Taraco.

May 23, 1951. Clear morning. Continued on toward Cuzco.

Stopped for an hour and fished in river Carabaya. Caught 6 trout, all rainbows, up to 10" long. Water very clear. None caught in fast-moving water. About 2 miles beyond Pucallpa saw coots, young coots (? - red frontal shield, some white feathers showing below folded wings), blue billed reynolds duck; several ducks with blue bills, & black crown sharply demarcated from light color below eye; night heron, & yellow legs.

Got gas in Cuzco. Arrived foot Lake Aricoma about 7 p.m. Saw many ^{vicuñas} ~~vicuñas~~ between Cuzco & Aricoma. Small (1/2 mile) separate lake at foot Aricoma, then narrow strip land before main lake. Camped about 1 mile above foot lake near ^{Lake Aricoma} stone house & sheep corral. Sunset about 6 p.m.

May 24, 1951. Sunrise on SW shore lake shortly after 6 a.m. but about 7 a.m. at our site. Took short walk along lake & decided there were no trout in it (very clear). Saw some vicuñas & huallatas. Returned to trailer. Carcasses seen here yesterday. We drove, without trailer, toward Limbani looking for good camping places. Continued down to 14500'; then returned (summit ^{Northwest} 15500). East side had less snow & ice as got morning sun, & this side greener than Cuzco side. Numerous streams & small

to
Limbani

Journal

May 24, 1951

Aricoma, 14900 ft., Dpto. Puno, Peru.

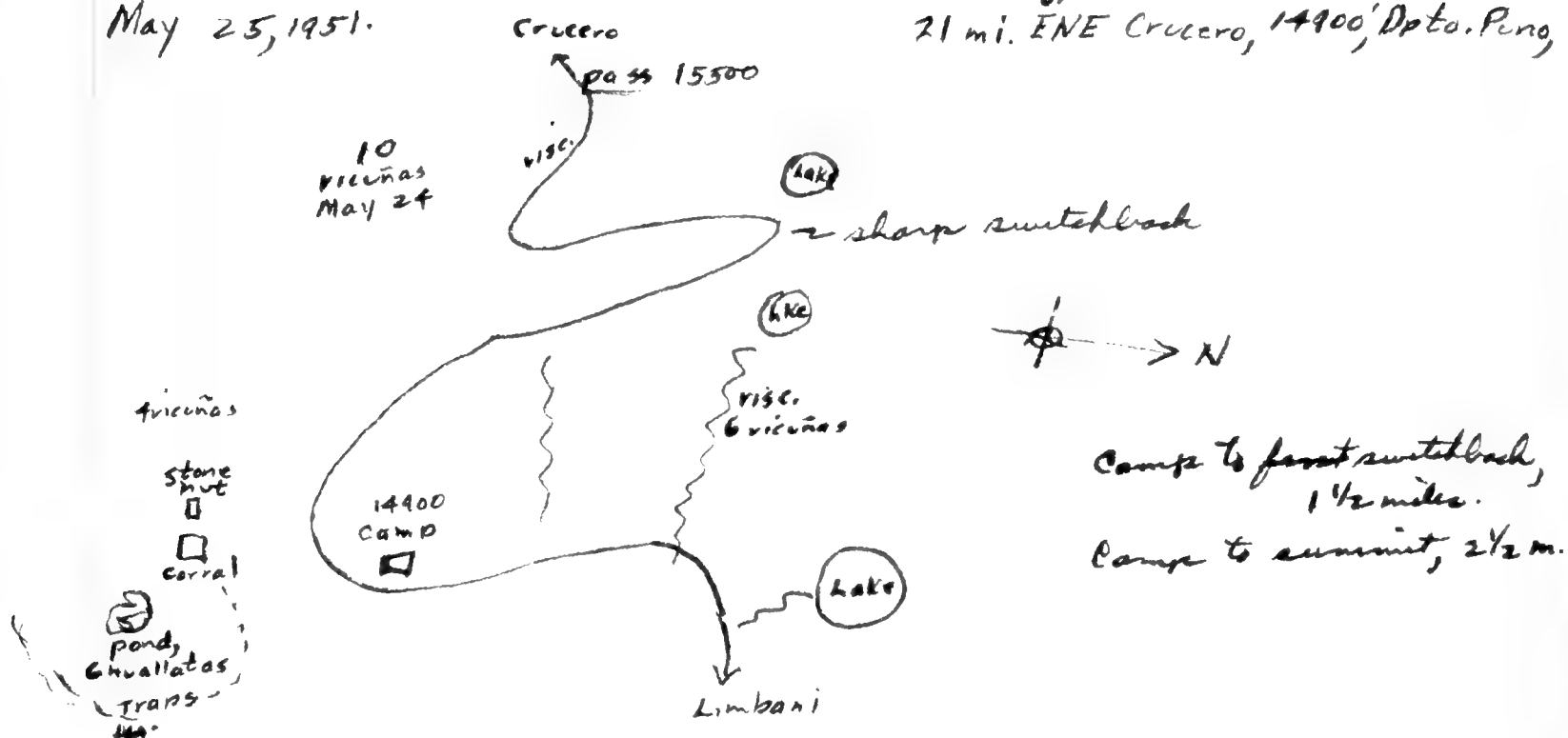
lakes. A few stone corals + one small herd alpacas seen. Saw 3 groups vicuñas, several geese + ducks (one with downy young), + many viscachas. Many rock slides + glacier topped peaks. Road hard + good but few places to drive off. Decided this a good area to camp in or near. Drove with trailer over crest + about 2 miles down on Limbani side to ~~14500~~¹⁴⁹⁰⁰ ft. elev. Camped there beside road. Set 30 snap traps in rocks near ponds + grass in rolling area. Only one truck passed today. The big grey + white plowse here, + the white bellied Thrinocorus hooshed small ^{walking} ~~ground~~ birds, + some flickers. A gray rufous robin-sized bird common on rocks. Saw one hummingbird - large, some white tipped tail feathers, orange head, body gray or brown. A highlight of day was seeing immature fox by road on Limbani side summit. It was ^{rather} ~~quite~~ fearless + stood 20' from car for several minutes. Cloudy + a few snowflakes in late afternoon.

May 25, 1951 Sun on peaks before 6 a.m. + at camp about 6:15.

Snap traps held 2 large Phyllotis, 1 small Phyllotis, + 1 short tailed Phyllotis. At ^{6:30} 6:15 a.m. no birds in evidence save geese + ducks on pond. Returned to camp. At sunrise, ^{low steamy} ~~steamy~~ clouds toward Limbani. About 8 a.m. departed on exploratory trip. 1/2 mile north of camp was lake 200 yds. across, very clear, much vegetation growing in water, flat overhanging banks. Two gadwall-like brownish ducks with dark band through eye swam on lake, then to shore + tucked in heads, standing in sun. Hundreds of fox(?) droppings around lake shore. ^{saw many viscachas} 1/4 hour east at 7:55 a.m. Saw 11 vicuñas. 9:05, ~~9:55~~ ^{9:55} ~~near~~ ^{vicuña} ~~cañon~~. Saw large brown hummingbird with green throat. Returned to camp 10:30 a.m. to write notes + put up specimens. -11°C. Last night.

Journal

May 25, 1951.

8 mi. SSW Limbani, Peru.
21 mi. ENE Crucero, 14900' Dpto. Puno,

In mid-afternoon drove to summit + set ²⁹ 30 traps in rocks + mixed grass. Shot 2 ~~Attagis~~ ^{Attagis} ~~teniomerus~~; allowed approach to 20 ft.; when one shot, other remained on ground 20 ft. from it. Saw groups 6, 5, 5, + 11 vicuñas on way to summit. Sunset 4:30.

May 26, 1951. The 30 nearly snap traps held nothing. Of 29 set on summit, only 2 holding mice were 2 Schuyler's baited with meat (all others no meat). Saw usual several groups of vicuñas in basin on east side of pass. Returned to camp + prepared specimens. Set 30 traps in rocks + grass near green lake at switchback. Clear all day. ^{Moved trailer to 200 yds. N SW of the stone hut.}

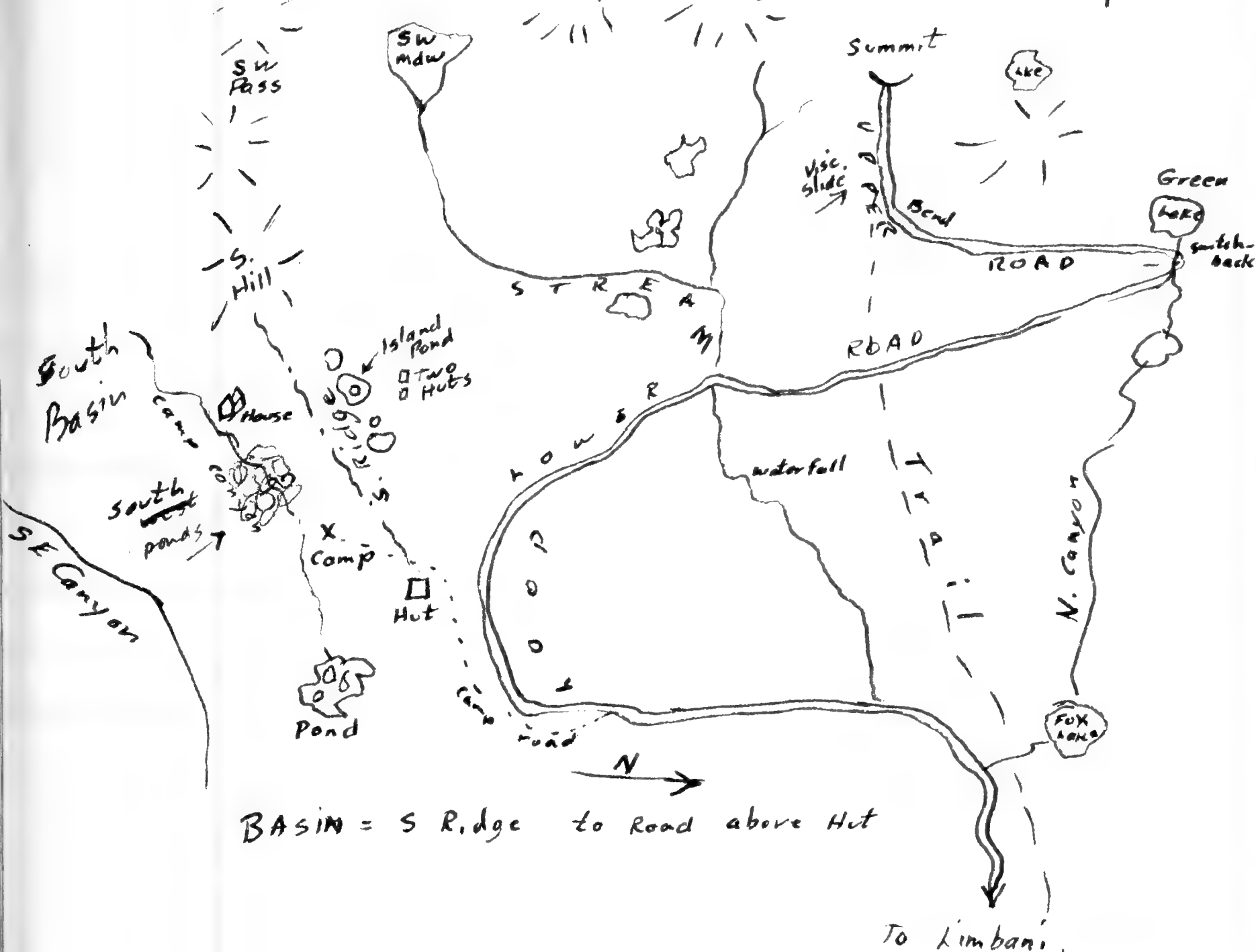
May 27, 1951. Min. temp. -9°C. Last night. Took up close string of 30 traps; one large Phyllotis caught (M.K. Catoloy). The 31 traps near green lake held one of same kind ^{Phyllotis} Phyllotis (21064). The 29 traps at summit of road held 2 Akodon jelskii. One bird in the 3' string to 4 mi caught in 90 traps. Counted 37 vicuñas in basin to see west of and above camp. Saw pair of rufous breasted Attagis ~~teniomerus~~ at summit. The white bellied bellied teniomerus - Thrinoceros beaked shrew were ^{common} ~~common~~ - about 15 flushed from green area at summit. Shot a gray bird which walked on ground

Journal

May 27, 1951

Pto. Puno, Peru
8 mi. SSW Limbani, 15000 ft.,

in robin style at summit; 5+ seen there + others nearer camp.
About 10% clouds by 1 p.m. Fair W. wind all morning.



May 28, 1951 Fair wind from W or N last night. We left camp about 8 a.m. to drive to Sandia road summit. Traps at Green Lake held 1 A. hodgsoni jelskii + tail of another. Traps at summit held 2 A. jelskii. Wind especially strong at foot Green Lake; many white-caps. Saw one band 14 vicuñas near Lower Road. 2.8 miles from camp road to Summit; ~~thence~~ 10.3 miles from camp road to foot lake. Saw 28 vicuñas at foot lake, same banding. 20.8 miles from camp road to Pato junction, thence 5 to Cruces. Bought gas + groceries. Then drove to Sandia

Journal

May 28, 1951

Nr. Crucero, Depto. Puno, Peru.

road, 25 miles from Limbani - Crucero - Pato junction. Saw vicuñas, geese, a kind of killdeer, many white bellied snipe, a blue-gray backed large hawk with white tail tipped with black band, & a horned owl (shot this). Less than 2 miles toward Sandia from S - Crucero junction encountered lake 5 \pm miles long set in heavily grazed & stocked rolling & steep ^{dry} short grass area. Saw one group 10 \pm branduarias. Summit, 14650', was 5 miles from junction. Then down switchbacks to a small clear stream in deep rocky canyon of dry aspect. Much llama traffic. We turned back & returned to ^{camp} ~~Crucero~~ (arrived about 6 p.m.). Going toward Sandia from Crucero crossed a clear run 16 miles out, 10' wide clear run 2.5 miles further on, & small clear stream 1.6 miles further. Partial (1/3) overcast in afternoon. About 10 miles toward Crucero from Sandia turnoff shot 3 of 4 young green-winged teal (?) on small shallow pond.

May 29, 1951. Min. temp. last 2 nights -6°C. Took up the 60 traps. Catch, 2 A. jelskii. Summit traps were near foot of slope to N. of road, others on S. side Green Lake. Clear until about 10 a.m.; 3/4 steamy cumulus by noon. Columbine-like red flower in bloom, & yellow flowered ^(narrow leaves) aromatic bush with heads of flowers. Of the 3 green winged teal shot yesterday, 2 were ♀ with largest ^{ovum} 1 mm., & one ♂ with testes 10 mm. long. Bills yellow on sides & black on top. Breast nearly white, speckled with spots anteriorly, & head & upper neck with fine dark ^{gray} & white lines. Fog in afternoon. Put up specimens including owl.

Journal

May 30, 1951

To Juliaca, Dpto. Puno, Peru.

At camp, -6° to $+16^{\circ}$ C. last day. Departed 8 a.m. for Juliaca. 8/10 overcast. At Pucallpa 10 a.m. Coat pond $2 \pm$ miles before Pucallpa had $15 \pm$ coats. One with green legs & ~~some~~ ^{conspicuous} red frontal shield (white edge on wing) had 4 young, downy, with red bills. At noon, at Acillo, $82 \frac{1}{2}$ miles from summit near camp. Saw a young fox cross road 4 miles toward Ayaviri. Then a lake with $50 \pm$ coats & some ducks. Some individual coats standing on $3'$ diameter islands of vegetation (nests?). 10 miles from Acillo to Ayaviri-Tirapata junction, then 6 miles to Tirapata, 7.8 miles to another small town, 1.4 to river crossing (bridge), & 0.9 miles to main Cuzco-Juliaca road. Thence 40.4 miles to Juliaca, arriving 2:40 p.m. Thence $27 \frac{1}{2}$ miles to Puno. Went to Dpto. Extranjera in Prefectura. They had heard nothing on my solicited for residence. Shopped. Returned to Juliaca & stayed with Duffie's. They had seen $5 \pm$ condors & many bats at Sondia last week.

May 31, 1951

Puno & Juliaca, Dpto. Puno, Peru.

Drove to Puno to visit Prefectura. Carnels not there but telegram sent to Lima, inquiring, & nothing else necessary. Shopped. Returned to Juliaca. Packed specimens so far dried & left them at Duffie's. On way to Puno in morning encountered flock $50 \pm$ parakeets $5 \pm$ miles from Puno & shot 2. ^{Phrygilus - discolor} Yellow breasted finch with olive ^{yellow} back common. One of these 6x4 mm, wt. 24g. [^] on ground about half way mark. Also saw sparrow hawk, white breasted larks with chestnut shoulders & blue-gray back, caracaras, and $30 \pm$ glossy ibis. Day clear but rather cool. Stayed Juliaca for night.

Journal

June 1, 1951

To Arecoma, Depto. Puno, Peru.

Completed shopping, greased + gased car, + departed Juliaca 1 p.m. Drove via Tlapata + Asillo to Cuzco + camp, arriving 8:30 p.m. Between Puno + Asillo there saw young of large tinamous cross road in dry grass country. Saw 7 turkey vultures on carcass of dog 10 miles from Juliaca, 5 flamingoes in pond 20 miles from Juliaca. Lake before Asillo had yellow-bellied coots with young (4+), cinnamon? teal, green winged teal, the brown duck with large white patch upper wing, + black crowned duck with white upper neck + sides head. Dark before reaching Arecoma. Saw 2 mice on road in lights. Captured one (10 $\frac{9}{15}$) at Arecoma summit, by hand. Found that there had been a light snowstorm May 30 + 31 in afternoon with snow on ground until noon following day. At noon May 31, temp. max. +9, min. -6, since 8 a.m. May 30. June 1, 9 a.m., reading +6, -10.

Saturday

June 2, 1951. Clear calm night. at 8 a.m. temp. -2°C., min. -12, max. +3. Put up specimens, unpacked groceries, etc.

In afternoon inspected vicinity of House to see if could get trailer there. Near House saw 3 blue black + some yellow sparrows, + several yellow Phrygillus finches. Group of 13 Lullatar on ground S. of the W. South Pond, + 2 about 200 yds. from them. About 5 of the brown ducks on ponds (Posterior 1/3 of secondary white dorsally); shot one, ♀ with largest ovum 2 mm. diam., many smaller, for meat. Two sizes gray flycatchers (?) present on rocks + ground. Set 34 snap traps, 26 near two huts + adjacent corrals, near rock walls +

Journal

Peru.

June 2, 1951 8 mi. SSW Limbani, 15000 ft, Depto. Puno,
 bushes, and others near large roads between Camp +
 Two Huts. Many smaller rodents & birds on remaining snow
 near Two Huts. Clear all day. Sunset 4:30 p.m. Then 0° C.

June 3, 1951. Sunday. Temp. min. - 7° C, max. + 3° C.
 Clear. Fair breeze. Saw ^{about 70} vicuñas in Basin +
 South Basin. Huallata, 15, qz at about same places as
 yesterday. Inspected traps 7 a.m.; catch one P. pictus, & this
 fresh & warm. This imm. ♀, wt. 28 gms, tot. length 171 mm.
 Caught base stone wall next to nettles, 6' from aromatic green bush.
 We departed in jeep for Limbani at 10:40 a.m. 13.2 miles
 to Limbani on good rocky dirt road, not excessively rough.
 Limbani at ± 11000'. Road not steep but one sharp hair-
 pin turn shortly above town. At 12000' some bushes, &
 many bushes at Limbani. Several well stocked stores there.
 Road continued on, narrow but good for jeep, another
 6 miles down west side of canyon. Passed through one
 100' long tunnel on way & road ended at end of 250
 yd. long tunnel in rock; ^(8750' at end road) then good mule trail down
 canyon. Below Limbani parts of ^{very steep high slopes} east of the 20' wide
 clear rushing river were forested with close jungle-
 like growth, some trees 50' or + in height. Above forest
^{ridge} ~~mountain~~ tops were grassy & rocky - possibly burned in
 past; one ridge burning at this time. ^{Below} at end
 road, jungle continuous to tops of ridges. Bromel-
 iads in trees. A prominent plant was bamboo-
 like large bush with palmate compound leaves.
 Black robb robin-like bird with yellow bill

Journal

June 3, 1951

Nr. Limbani, Dpto. Puno, Peru
 seen by roadside several times. Another much larger
 and somewhat brown, in bushes. A large hunting? with
 brilliant blue back & brilliant scarlet breast; at least 4
 at one site. Small wrens in wet undergrowth. Shot a black
 flycatcher with chestnut breast & white supercilious lines at
 edge river. Found a few bat-like droppings in lower tunnel
 but saw no bats. Camped near lower end road. Set 40
 snap traps on west bank & near tunnel & road, all near
 rocks in bush height or grassy vegetation. At least sun
 set about 2 p.m. because of depth canyon. At least 3 mice
 in traps by 7 p.m. Cool but not freezing at night. In
 day, some insects (especially a large green-eyed fly) bother-
 some. Little dew at night. Watched for bats in evening & visited
 tunnel after dark but saw no bats.

June 4, 1951

Nr. Limbani & to Aricoima, Dpto. Puno
~~Traps held~~ Total catch in traps, 3 small Oryzomys?
 one medium, one large (all put up), & 5 Akodon-like
 pointed faced mice (one discarded). Departed about 9 a.m.
 & leisurely returned to our camp near Aricoima. Viscachas
 encountered at about 14000'. No huallatas or vicuñas
 seen below camp area. Houses in use & cattle seen
 less than 3 miles down road from camp. Many stone ^{cor-}als
 & houses above Limbani; a few below, where road
 approaches river. In about 22 miles of road, a
 drop of nearly 7000' (150' short) from summit, &
 bird, ^{& plant} mammal, life much different, at camp exam-
 ined trap line & found one Phyllotis visator (♂ juv. ♀

Journal

Peru

June 4, 1951

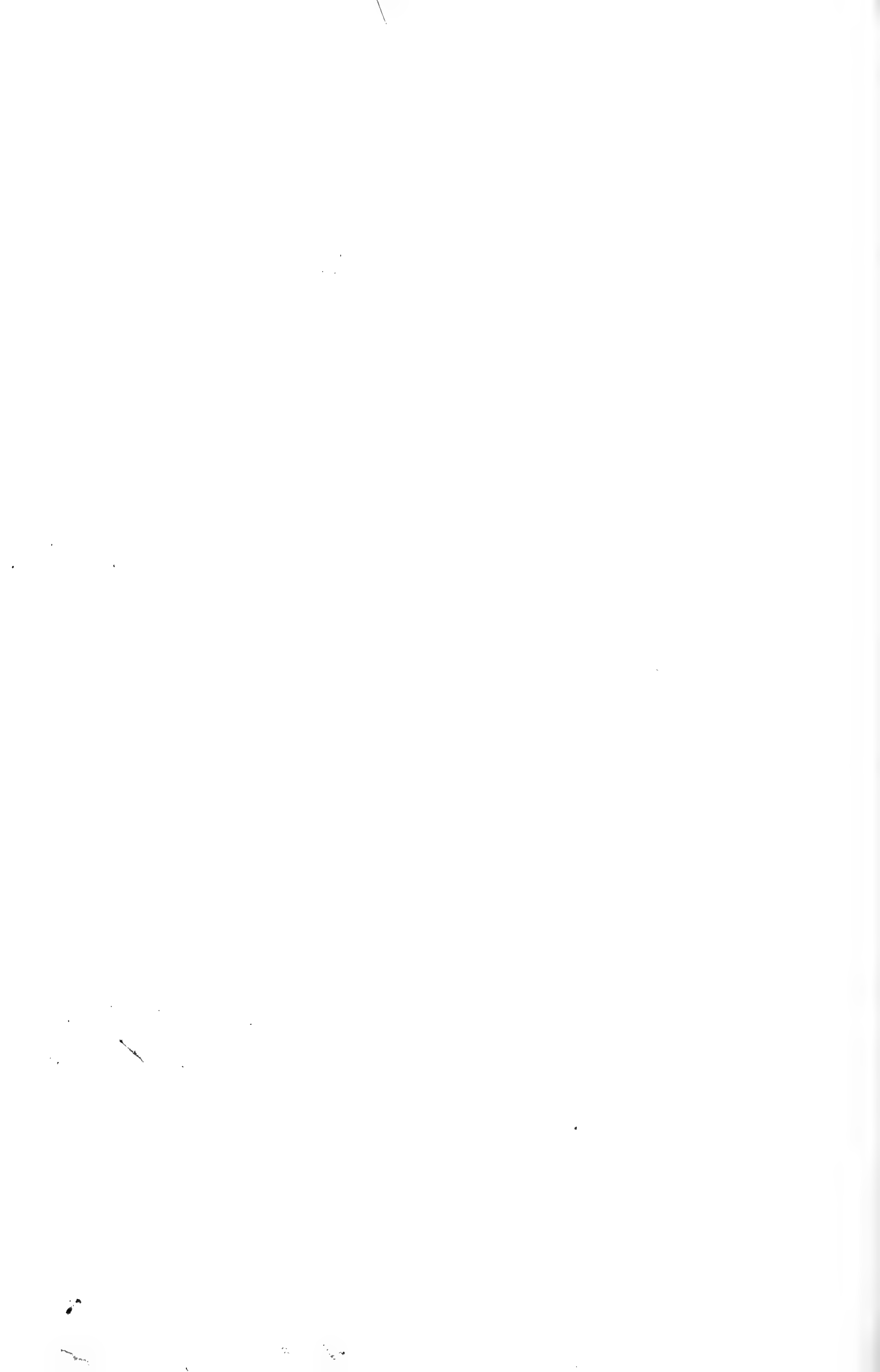
8 mi. SSW Limbani, Depto. Puno, Peru

min., no signs of sexual activity) in traps, 6[±] others sprung & empty. Sunset 4:30 p.m. at trailer.

June 5, 1951. Investigated the 34 traps at 8 a.m., one ♀ adult P. pictus. Added one blind steel set to line. Clear day with ^{minimum} wind down canyon. -2°C , since yesterday noon. We partly unpacked trailer and started to move to abandoned Indian house & corals about 1/2 mile SW of camp. Bat stuck ^{twice} to ~~tree~~ and camped at South Ponds. Clouded up in p.m. but clear at night.

June 6, 1951. Minimum temps. -6°C . Snap traps held 1 large Phyllotis, 1 P. pictus, 1 Zonotrichia. Shot an owl, & a gray bird with white throat which was common on rocks in pasture. Moved trailer to the Indian house for permanent camp. Put up specimens. Set 20 snap & Schuyler traps near corals near house. Cloudy in afternoon. New moon.

June 7, 1951. Min. temp. -6°C . Clear night & morning. Fair breeze in morning. 2 Phyllotis pictus in traps at 7 a.m., & 3 more (+ tail of A. jelskii) by 9 a.m. All pictus apparently min. At 3 p.m. one A. jelskii in trap. From 3 to 6 p.m. walked in S. Basin and saw over 50 vicuñas, 6[±] geese. Set 20 traps, 10 among tall grass & rocks on wet slope next to icy water-fall 1 mile WSW of house, & 10 among tall bunches grass next to clear ponds in same area. No further catch in traps near house by 6 p.m. Breeze all day. About 1/10 clouds with light snow over snow-capped peaks. New moon. Shot on open geese near look for meat.



Journal

June 8, 1951

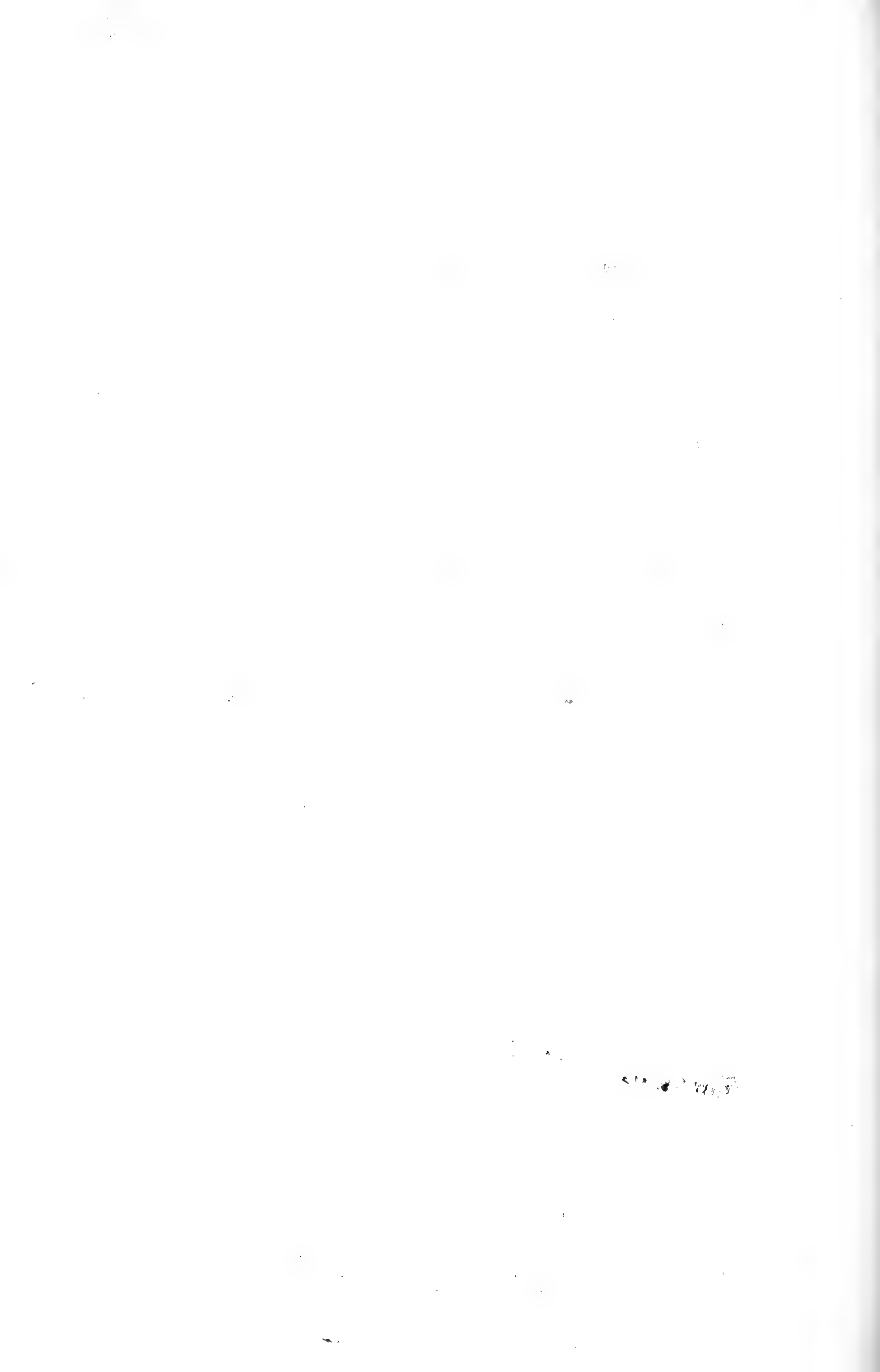
Aricama, 8 miles SSW Limbani, 15000', Depto. Puno

8/10 overcast in morning. Min. temp. -3°C , max. 8°C . Made rounds close to traps - catch 1 A. jelskii. Then to farther traps: catch 1 Neotoma & 1 Phyllotis pictus. Hiked up slope from both latter trap line to SW pass of Bocin. Shot 4 vicuñas at one rock slide on the way. Saw several bands vicuñas including groups 13 & 9.

8/10 overcast 8 a.m., nearly clear 10 a.m., clouded up & light snow & hail 1 p.m. Overcast rest afternoon; fog coming up canyon from E. after sunset. Set 12 additional traps above the icy falls (1 mile SW of House). One A. jelskii in trap 4:30; discarded.

June 9, 1951. 9/10 overcast at 8 a.m.; thin film ice on ponds. Close traps held 1 P. pictus, 1 A. jelskii, 1 P. darwini (imm., wt. 33, tot. length 212, $\frac{1}{2}$ testis 4x3. Then 3, ~~one~~ caught at base rock walls of corral near house, all discarded. Visited the far group of 33+ traps; catch 1 Neotoma, 5 A. jelskii, 1 large Phyllotis. Returning to House 11 a.m. found one imm. P. pictus in trap. Nothing more in close traps by 4:15 p.m. Light snow starting before noon, sometimes heavy enough to hinder visibility, melting as hit ground. Spent 2 hrs. watching group 23 vicuñas near House in p.m. Temp. min. 0°C , max. 7°C , since yesterday a.m. In morning picked up top 5 of traps above Ice Falls & set near cliffs & thick grass.

June 10, 1951 Close traps held 0. Far traps held 1 Chinchilla & 1 Akodon jelskii (discarded). Min. temp. -2°C . Overcast in morning (no snow last night) & occasionally a few snowflakes. Flushed pair of the orange breasted Ottagis ~~stenurus~~ ^{stenurus} 1/4 mile SW camp. They flew with shrill repeated whistle &



Journal

June 10, 1951

Aricoma, 15000', Depto. Puno, Peru.

landed again, together, 50 yds. away. Saw bunch 21 vicuñas $\frac{1}{2}$ mile west House. Still overcast at noon. Hail in afternoon at times. Visited rock outcroppings $\frac{1}{2}$ mile west of House & Mary set 6 or 8 traps there, Shermans & Schuylers. At my trap line, took up all close traps, took up lowest 10 of far line (grass near pond), & set 10 additional near cliffs in grass about 35 in all new, all ^{on} in rock-grass slope above Ice Falls. Fog came up canyon & limited vision shortly after sunset. Clear at night.

June 11, 1951. Temp. - 4° and $+6^{\circ}$ C. at 7:30 a.m.; clear but clouds low to east. Examined my traps: catch 1 P. pictus, 1 A. jelskii, 1 Neotoma, 3 Chinchillula. Mary had 1 Chinchillula & 1 jelskii in 8 traps. I shot a flycatcher, saw a swallow. Yesterday in storm saw flock 100+ yellowish small finches (Spinus?) on ground & rocks. Clouded up nearly completely by noon. Spent most of day putting up specimens. Watched vicuñas $\frac{3}{4}$ hr. in evening.

June 12, 1951. Temp. min. -2° C., max. $+7\frac{1}{2}^{\circ}$ C. Clear but clouds low to E. My 28 traps above Ice Falls (took up there at Ice Falls yesterday & placed among rocks & grass at higher level) held one juvenile weasel & 1 Chinchillula ♀. Returned to House 10 a.m. Saw one swallow over grass rdw. & rocks of hillside. Several times saw flocks of 15+ red Thimocores snipe; all fly simultaneously with commercial squealing noise. Put up specimens. Watched vicuñas 4 to 5 p.m. Fog coming up canyon 5 p.m. Up to $\frac{1}{2}$ cloudy during day.

June 13, 1951. My 28 traps held 91 gmn. imm. ♂ Chinchillula and 36 gmn. ♂ Neotoma. Latter taken in tunnel in thick tall dry grass, 5' below foot small cliff on steep slope (not saved).

We packed up & at 9:30 a.m. departed in jeep for Cuzco. Reach-

Journal

June 13, 1951

To Macusani, Dpto. Puno, Perú.

* altim. set for 12500' + lower 50'/1000 down this.

ed road in. 9 miles. Summit. 2.6 miles ^{on road} from ^{Crucero} 22.8
 Areima (where road crosses outlet) 7.5 from summit. Leaving, saw
 from Summit. Shopped some; mailman not in town. Drove toward
 Rosario + 16.5 miles from Crucero took turnoff toward Macu-
 sani. Road up rolling short grass pasture valley where bands
 of alpacas + llamas but few cliffs + little cultivation. Higher
 peaks without vegetation + with ^{large} rock slides. Summit was
 16.7 miles from turnoff; elev. ^[prob. 15050] 15700' by altimeter. Little water
 there; an occasional small lake or stream. No bushes + few
 rock outcroppings. Windy. Macusani about 12 miles beyond
 at 14100', a town about size of Crucero with fair selection in shops.
 Approach + this area in broad short grass rolling area with little
 cultivation, few houses, but several bands stock. Large snowing
 + jagged ^{nevadas} ~~nevadas~~ to right as approach town. Did not stay
 but turned around + drove back toward Crucero, ^{main} ~~road~~ saw a
 few vicuñas. Road satisfactory but rougher than Crucero-Limban
 road. Macusani area not as green or wet as our camp
 area though also on amazon side of mts. Returned to Crucero,
 bought supplies, + drove to camp in dark. Saw no rodents
 or other mammals in road on way.

June 14, 1951. Max. min. thermometer read +8° + 0° (It
 was half or more overcast all day yesterday + threatened rain
 near Crucero at dusk). My 28 traps held: Peromyscus +
 1 A. jelskii imm. (discarded; 27 gm wt, tot. l. 181). Mary had
 taken up her 6 live traps yesterday + I set them in my
 line at foot of Chuchilla cliff baiting with peanuts,
 oatmeal, + mouse meat. Shifted 4 of my traps. No 34

[illegible]

Journal of Management Studies, 19(6), 701-718.

... ..

Journal

June 14, 1951

Aricoma, 15000', Depto. Puno, Peru.

Total set. Returned to House. Fair E. wind; half overcast (noon).

Put up Peromyscus and a Phyllotis (M.K. trap). Hunted ducks for 2 hrs. but got none; at least 12 of the ^[Larus cristata] "brown wedges" on or near S. Parks. Rain + hail between 3 + 4 p.m.

June 15, 1951. Friday. Clear except clouds low to E. Temp.

-20° + +12°C. At 7:45 left for traps. Shot a hummingbird + saw another.

No catch in traps (A. jelskii tail). Set 3 additional traps

close to one where ^{Peromyscus} taken yesterday; baited all 4 with Peromyscus stomach contents. Returned to House by 9:40 p.m. We drove to

Cruero, departing 10:30 a.m. + returning 3:30 p.m. Saw

many vicuñas en route. Half overcast all day but no precipitation. Saw a condor near camp. Shot 2 ^{dupes of A. cristata} of the ~~"brown wedges"~~ "near S. Parks" in evening.

June 16, 1951. Temp. -20° + +10°C. Foggy clouds on

mountains at 8 a.m. + all overcast by noon. My traps

held 1 Phyllotis pictus + one arilus (?). Picked up all traps

save 6 Sherman + 5 other + reset them in grass +

rocks near cliffs N. of Ice Lake. Returned to camp. Put up

one Phyllotis. Watched vicuñas for 2 hrs. Snow from about

4:30 on, ground opaque white by dark.

June 17, 1951. Temp. -1½°, +5½°C. at 7:30. Ground fairly solid white, snow ½" to 1" deep. apparently snowed after 7 p.m.

last evening. My traps held 2 A. jelskii. took up all old traps

(6 Sherman, 5 other). Set a few more in new denie so total 29.

Ceius overcast (½) + cumulo-nimbus around edges.

Returned to camp 10:30 a.m. Built box trap. Shot + put

up a Geococcyx + a Muscisapida. Moon about one

Journal

June 17, 1951

Aricoma, 15000', Dpto. Puno, Peru.

day before full. Fog up canyon to camp area 5 p.m. Mary had one ♀ jelskii in trap, not examined last 2 days. She put live steel trap in front of vicacha hole. Fog until after 6 p.m., then cirrus overcast.

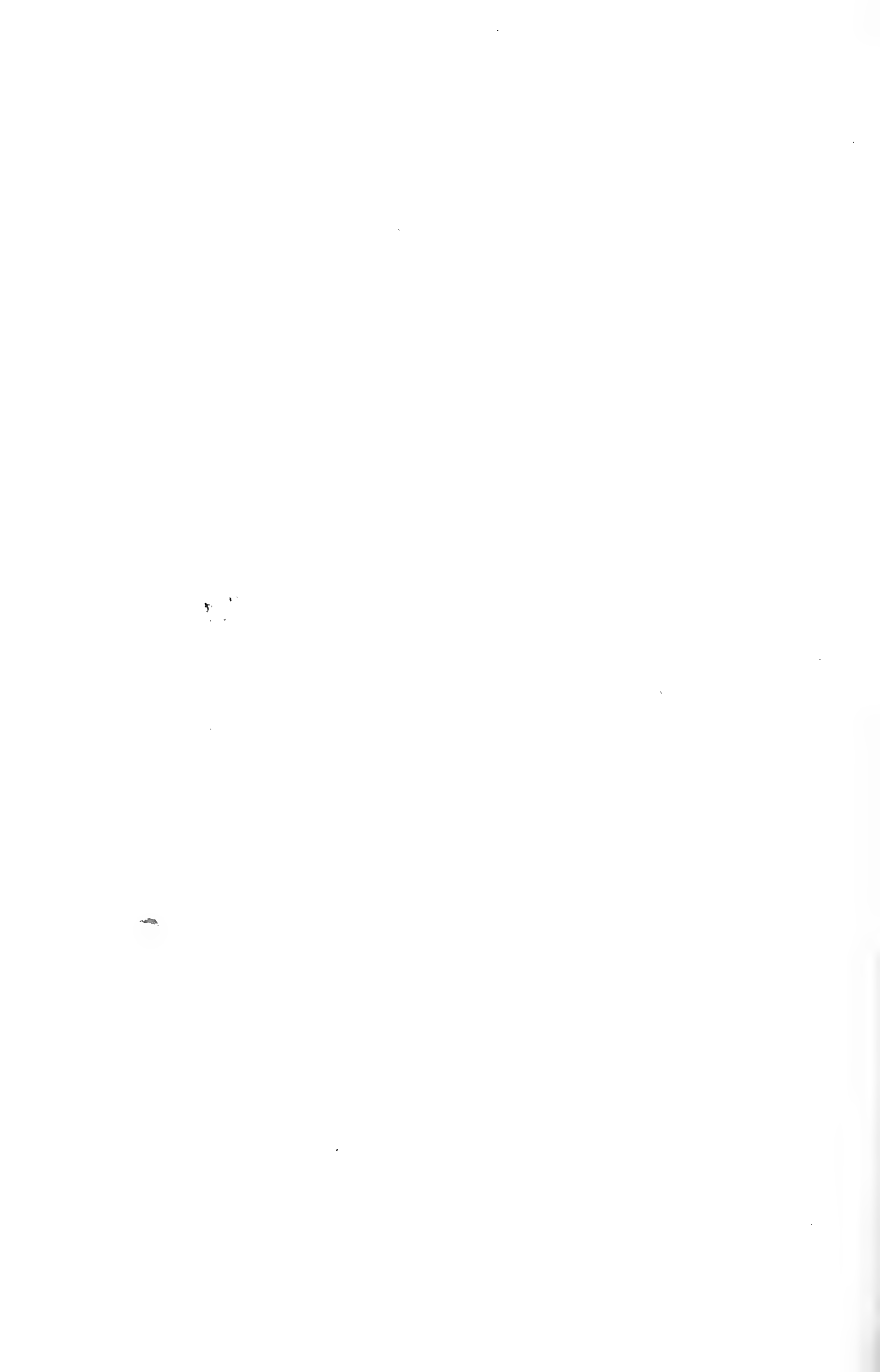
June 18, 1951. Temps. -2° & $+8\frac{1}{2}^{\circ}$ C. at 7:30. Band 39 vicuñas seen near camp. Two alpacas strayed near & Indians came for them. Mary had no luck with vicacha trap. I left camp & examined my 29 traps; catch only one A. jelskii. Set 11 more traps that area, 40 in all now. Back at House 10:30. About $\frac{1}{10}$ clouds & little breeze; warmer than usual morning.

Shot gray flycatcher & dark gray finch on rocks on damp gentle slopes. Watched vicuñas \pm hrs. Full moon. Sunset 4:45 \pm .

June 19, 1951. Temps. $-\frac{1}{2}^{\circ}$, $+13^{\circ}$ C. My traps held 2 Chindiffula, 1 Neotoma, 1 Phyllotis pictus. Warm morning, $\frac{1}{10}$ clouds increasing to $\frac{9}{10}$ by noon. Put up mice. Snow, light, for about an hour at 3 p.m. Took walk along base S. Hill looking for rodent sign. Flushed 2 of the ~~titianus~~ ^{atragis} on S. Ridge.

June 20, 1951. Temps. -2° , $+7^{\circ}$. Clear. My trap line held 1 lizard, no mammals. Returned to House 0930. We drove to road & up to Vicacha Rocks & there set 3 steel traps. Caught one ♂ & brought it home. I watched vicuña band of 10 from 12:30 to 2 p.m. Set a fox trap (#3) 50 yds. w. House. Clouded up gradually, $\frac{6}{10}$ by noon, nearly completely by 3 p.m. Moonrise about 7:30 p.m., moon waning, but shortly past full.

June 21, 1951. Temps. -2° , $+7^{\circ}$ C. Clear with cold wind down canyon. We went to Upper Road to try to catch vicachas & remained until noon, catching none. Saw several bands vicuñas, up to 15 in number, & unusually



Journal

June 21, 1951

Aricono, 15000', Depto. ^{Puno} ~~Arequipa~~, Peru

lot of chasing between individuals, returned to camp. Becoming overcast at noon; a few flakes snow in afternoon. I picked up my traps (no catch) & moved about 20 to 100' higher level $\frac{1}{2}$ mile W. where sign suggested Peromyscus. (Amisotomys in rock crevices & large fens). Shot Peromyscus near camp held imm. ♀ fox in morning.

June 22, 1951. Traps held 1 Phyllotis, 1 Peromyscus. Temps. -2° , $+10^{\circ}$ C. Set about 20 additional traps in vicinity others and around some swampy & calm meadow. An Akodon jelskii got in trap between 9 a.m. & noon. Clear, in morning but $\frac{1}{10}$ overcast with cold east wind at 12:30. Returned camp. Shot one Spizella. Put up animals. Flushed pair Attagis at E. In Mdw.

June 23, 1951. Temps. -2° , $+10^{\circ}$. Clear at 7 a.m., $\frac{2}{10}$ clouds by 10:30. Adult fox (♀ 1122) in trap 50 yds. from House. Mary went vis-
cacha hunting; caught none. 10:30, I to trap line. No catch. Added 10 traps. Hundreds of fuzzy inch-long black caterpillars, reddish brown laterally, on distichia mat of this meadow (W. In Mdw.). Remains of many next to rocks as if eaten by mice. Returned to House. Intestinal troubles so I loafed. Half overcast 3 p.m.

June 24, 1951. Temps. -2° , $+7^{\circ}$ C. Clear ($\frac{1}{10}$ cirrus). Light W. breeze. 8 a.m. went to traps, returning 11:15. Traps held 1 Peromyscus (63 gms., ♀, vag. perf; rip. minute; kept captive, caught by foot), 2 A. jelskii, 1 Phyllotis imm. (none put up). $\frac{2}{10}$ cumulus by noon & fair E. breeze. Phyllotis had yellowish back, light buffy lines on sides, huge ears (20 5-110-27-28, wt. 27 gms.), taken on shelf of rock near 8" long leaved composite-like headed plant & climbing tola, 100' from water. Shot 2 ducks on pond (S. Pond). Watched vicuñas for an hour before sunset. ^{4:55.} $\frac{9}{10}$ overcast & fog coming up canyon at 5 p.m.

Journal

June 25, 1951

Aricoma, 15000', Opts. Puno, Peru.

Wind at night. Temp. -2° , $+9^{\circ}$ C. $\frac{1}{10}$ carrier at 8 a.m. ~~A~~ Panomys died for lack food having eaten Seneio down to woody stem only. Did not eat 2 other plants in cage. Put up Panomys. Left for traps 8:30. Traps held 3 Nestomys, all ♂♂. One discarded. Returned to House 11:45. Put up Nestomys. Took up all traps. Clouds increased to $\frac{5}{10}$ by 2 p.m. Prepared to leave tomorrow for Juliaca.

June 26, 1945

To Juliaca, Opts. Puno, Peru.

at 8:45 a.m. departed from camp. Carrier clouds; very clear air; little breeze. Saw many vicuñas on way to Cruzes. Got mail & drove rest of 150 miles to Juliaca. Pond near Rosario had black rails, red fronted gallinules, geese, ducks (teal & bigger brown duck). Lake below Azillo had usual large quantity ducks & coots. Red-rump legged coot with pale yellow bill on reed islands 100' from shore. While one stood on island, another swam to it with green reeds in bill. Very windy at lake. Teal also in flock in pond north of Juliaca. Arrived Juliaca about 4 p.m. Camped at first bridge on road to Huancane.

June 27, 1951.

Juliaca, Opts. Puno, Peru.

Went to Clinica Americana. Daffier away at 9 miles mil. We stayed there while writing letters, shopping, & having radiator repaired. Finished business 4 p.m. Drove toward Puno & back on Arequipa road to about km. 25 (town of Tiquillaca (sp.?), then turned left onto road to San Antonio de Esquilache. Camped at about 13000', just over a divide, $13\frac{1}{2}$ miles out on this road. A bus & 3 or more trucks passed during the cold clear night. Made pass looking little grazed along this road. Many grotesque rock outcroppings.

Journal

June 28, 1951

San Antonio de Esquilache, Dpto. Puno, Perú

Cold morning. Breath froze in nostrils. Water froze quickly at 7 a.m. We departed 9 a.m. for San Antonio de Esquilache. Road good. We arrived about 11:30. Beyond camp grass shorter & much grazed. The mine on a gray ^{silt-}~~silt~~ filled 15' wide river, at office, our altimeter read 14750' (they said 15000 by military survey). Met manager, an Austrian named Davidovich. Had lunch with him & doctor & 2 other men (& wives 2 of them). They had nicely furnished lounging room & nicely prepared food. They had seen vicuñas but no vicuñas or other animals in this region. The village of S.A. de E. a few minutes beyond, on same stream. We drove up the highest ascending road. ~~It~~ In about 2 miles it ended, at 15000', but trail went to the crest nearby. Hundreds of Indians working mines in the area, & many new mud dwellings being built. Little vegetation here but rock slides, rock outcroppings, & frozen water seeps. Sheeps & alpacas grazing on slopes. Rather overgrazed & mud-looking ground with ^{promising} few trapping sites or camping sites. Water in some tributaries to main river. About 2 p.m. we left & drove to Juliaca. Saw no vicuñas or tinamous going ^{to} or coming from S.A. de E. Did see 2 flocks 50+ green parakeets at 14000' ft. Stayed at Clinica Americana in Juliaca. Dr. Duffy had returned from recent trip to 30 km. below Quinu Mill (a bridge being built there) and reported road excellent (550 km. from Juliaca; 2 long days of driving).

June 29, 1951.

Juliaca, Dpto. Puno

Spent day washing, writing letters, shopping. Then drove to hill near Puno & camped.

June 30, 1951. Shopped at Puno. Visited Extranjeria - no further word on our permits. Met Hugh Mitchell, talkative

Journal

June 30, 1951.

To Aricoma, 15000', Dpto. Puno, Peru.

Irish Baptist missionary, with hdqtrs. in Arequipa. He offered us lodging & parking space for car & trailer any time of day or night. Returned to Arequipa Juliaia. About 2 p.m. started for camp. Arrived 9:30 p.m. (153 miles from Juliaia). Temperatures since departure -3° to $+13^{\circ}$ C. Some members of road crew camped nearby had evidently found our camp, but only some wood & cans in garbage were missing. About 2 miles above junction (Potos-Limani-Cruces) saw a Conepatus at edge of road ⁱⁿ dry short grass rolling country, about 14000'.

July 1, 1951. Rested & overhauled equipment. After dark departed in jeep for Juliaia to pack & send specimens to Mrs. Heller in Arequipa. Drove to near Tarapata and camped in car. About 7 p.m. saw a Conepatus on edge road in rocky area at head of Lake Aricoma. It ran 100± yds. in front of car along edge road, then descended bank a few yards & entered a hole.

July 2, 1951. Drove on to Juliaia ^{To Juliaia}. Packed specimens & put them on truck for Arequipa (4 cases). Drove back to beyond Asillo & camped in car.

July 3, 1951. Drove on to ^{To Aricoma} about halfway between Rosario and Cruces. There the slow-moving clear river came close to road. Saw 300± trout of from 6" to 2' size in river. Fished about an hour & caught 5, smallest about 14", all rainbows. One with many eggs. 0 sized. Largest



Journal

- July 3, 1951 Arecoma, 15000', Depto. Puno, Peru.
 somewhat thin & reddish on sides. Perhaps a spawning
 group. Drove on to Cuicero, then to Arecoma camp
 arriving noon. Temps. since leaving -2° , $+14\frac{1}{2}^{\circ}\text{C}$,
 thermometer in cavity in rock wall. Cumulus clouds &
 pleasant temperature with little wind. Road crew
 had burned about an acre of mired rocks & grass in North
 Canyon trying to get viscachas with smoke (drive out
 or kill in rocks). ^{of summit on rocky point.} Saw caracara nest, said to have eggs, on lake side.
 July 4, 1951. Temps. -2° , $+10^{\circ}$, $+3^{\circ}$ at 8 a.m. Clear, calm. Little ice
 on water. Watched vicuñas most of day. Saw vicuña
 groups pursue fox & saw territorial encounters. Not
 over $\frac{2}{10}$ clouds, cumulus, all day; fair E. breeze.
 July 5, 1951. Temps. -3° , $+9^{\circ}$, $+2^{\circ}$ at 8 a.m. Clear, calm.
 Watched vicuñas 8-12, 1 to 4:30. Saw group of 31 with many
 fights within and whole group chased a few times by
 single ♂ of small hands. Colder than yesterday. Fair E.
 wind. Fog 4:30-5:30. Not over $\frac{1}{10}$ clouds, cumulus, all day.
 July 6, 1951. Water getting low. Flowing trickle of water supply
 dried up. Main duck pond getting dry.
 July 6, 1951. Temps. $-\frac{1}{2}^{\circ}$, $+10^{\circ}\text{C}$. Clear. Fair wind down canyon
 6:30 a.m. Watched vicuñas, mainly bunch 31, 7:15-12, 1 to 4:30.
 Breeze died about 1 p.m., resumed about 4. Clear all day.
 July 7, 1951. Temps. $-1\frac{1}{2}^{\circ}$, $+11^{\circ}\text{C}$. Fair breeze down canyon at
 6:45 a.m. Clear. Watched vicuñas 6:45 a.m. to 12, ^{1 to 5 p.m.} The snipe-
^{Thinocorus} like plover (like 990) in flocks 20+. Flock 50+ finches, gray
 backs & yellow breasts (Phrygilus) seen. Ducks scarce at S. Pond
 now - because of shooting & low water. Place name: Rock Shelter

Journal

July 7, 1951.

Aricoma, 15000', Depto. Puno, Peru.

for roofless shelter 200 yds. NN of House where I oft watch vicuñas. "Indian Markers" are 3 rock piles (spire, vertical pile, & rock house) on S. Ridge at base of S. Hill. Breeze down canyon reversed to up canyon about 11 a.m. 7/10 overcast at noon; a few snowflakes 1 p.m. Overcast 8/10 at sunset. Sunset by baroph. to S. at 5:25 p.m.

July 8, 1951 Temps. -2° , $+10^{\circ}$ C. Low stratus cloud to E. - sun rose above it 6:30 a.m. Calm until 8:30 a.m.; then fair breeze up canyon. 2/10 clouds (alto-stratus) to E. at 9 a.m. Watched vicuñas 6:10-7 a.m., 8 a.m. - 11:30^{1 p.m. - 4 p.m.}, especially groups of 1 ♀ or ♂. 8/10 overcast noon. Fog up canyon about 4 p.m., ~~stopping~~ disappearing after sunset. Clear night.

July 9, 1951. Temps. -3° , $+10^{\circ}$ C. Clear, calm. Breeze up canyon starting about 9:30. Low stratus cloud over jungle to E. Watched vicuñas, especially large group ♂ or ♂, 8 to 12, 1 to 4. They traveled about one mile during day. No fog in evening. Shot ♂ duck in Island Lake.

July 10, 1951. Temps. -4° C., $+10^{\circ}$ C. Clear. Breeze up canyon by 8 a.m. Couldn't relocate ^{large} group ♂ or ♂. Set traps, 15 near rock walls & yellow sage 100 yds. above House, 10 near stone corral on hill on at. E. side S. Ponds, 5 near rock outcropping there, 25-20 among rocks, grass, & yellow sage near bottom of SE Canyon on N-facing slope (several vicuñas there). By 11:30 a.m., 2 P. pictus and 1 A. yelskii in 15 traps near House, another pictus by 4 p.m. (one ♀ pictus M.K. catalog; other mice discarded). Set fox traps 50 yds. uphill from House. Clear all day with breeze up canyon.

July 11, 1951. Temps. -3° , $+9^{\circ}$ C. Clear. Visited traps. Catch 1 Chinchilla above House. 2 P. darwini at stone corral, set 10 additional traps, at another stone corral halfway down to bottom SE Canyon.

Journal

July 11, 1951.

Aricoma, 15000', Dpto. Puno, Peru.

Set 10[±] more traps at in lowest groups - about 60 out now.

Fox trap held ♂. Shot young [♂] viscacha near lowest trap line. Fox 5 kilos, ♂ (♂ 1128). Put up 1 Phyllotis darwini, fox (skull only), 1 Chinchillula. Moon about 1/2, waning.

July 12, 1950. Temps. - 4 1/2°, + 8 1/2°C. Traps held 1 Phyllotis sublimis (corral on hill), 1 Peromyscus (bottom canyon). Clear; breeze. Shot 2 viscachas & duck. Put up specimens. Three hunters visited camp in afternoon. They gave me heads of 2 huemul & 1 vicuña. One said that he had killed 2 bears within 7 leagues of Limboni recently (men from Limboni). He said there were many deer near Allopata (road to 3 km. from Macusani - near Suanya?). He also said there were many weasels near Mabo. Set 5 live traps for Chinchillula near rock walls 100 yds. from House. Clear all day; somewhat smoky.

July 13, 1951. Temps. - 5°, + 10°C. Clear; smoky haze. Saw fox near (100') trailer and another 1/4 mile away before 8 a.m. Nearest traps held 1 P. pictus. Traps bottom SE Canyon held 2 P. pictus, 2 A. jelskii. Discarded all mice.

Shot one viscacha. Skinned 3 heads acquired yesterday.

July 14, 1951. Temps. - 5°, + 11°C. Clear. Near live traps held 1 A. jelskii (discarded). Other traps not inspected. Drove to Crucero for mail & supplies. Fished in Carabaya 9 miles toward Rosario from Crucero. Took 18 rainbows, 5" to 14" in a less than 1 1/2 hrs. at midday. Shot 2 ^[buses] banderinas near Crucero. Returned to Aricoma.

Journal

July 15, 1951 Sunday

Aricoma, 15000' Dist. Puno, Peru

Temps. $-4\frac{1}{2}^{\circ}\text{C}$. last night min. Clear; smoky haze. In-
 Trops near house: 1 bird (~~Chondestes~~), 1 A. jelskii.

expected traps. Only string law in SE Canyon among rocks
 & Senecio had catch: 2 A. jelskii, 3 P. pictus, 2 Punomys

(young). Returned to camp & inspected & put up spec-
 imens. Briefly looked for vicuñas in moonlight. (moon 1 or 2 days before full)

July 16, 1951. Temps. $-4\frac{1}{2}^{\circ}$, $+11^{\circ}\text{C}$. Clear. Watched vicuñas

7:30 to 11 a.m. Shot a Phrygilus, one of flock 50+. The ♂
 bandurria (1135) shot July 14 had growth on sole of
 center one foot, potatoe-like tubercular bulge on foot,
 curving around toes, $1 \times 1\frac{1}{2} \times \frac{1}{2}$ " (thick), covered with
 regular foot scales. Bones normal. Watched vicuñas go
 to no bed. Lacks about 1 day of full moon.

July 17, 1951. Temps. -4°C , $+9^{\circ}\text{C}$. Watched vicuñas 5:30 to

6:20 a.m. Clear, warm. Shot a 998, from flock 20+; made skeleton.
 (Thinocorus)

Drove 7.6 miles toward Limbani to 13000 ft. level and
 set 76 traps on slopes near rocks, tall grass, brush. The
 yellow-flowered Senecio present but also quince-like bush,
 at least 2 other kinds bushes, and yucca-like cactus.

Clear day & warm. Returned to House. Saw an immature
 condor near House. Saw fox near S. Ponds at noon &
 one running from garbage pile 5 p.m. (shot this one, a
 ♀). Several days ago, when trapping law in SE Canyon
 saw a hummingbird, large & brown, perch on fresh blood
 spot where wisacha shot - attracted by red? or feed-
 ing? Full moon, clear night

Temps. $-3\frac{1}{2}^{\circ}$, $+9^{\circ}\text{C}$.

July 18, 1951. Checked on 2 bushes vicuñas at 6 a.m.

We drove down to traps. Catch in first 40: 3 P. pictus

Journal

July 16, 1951

Arcana, 15000', Depto. Kuy, Peru.

1 Oryzomys (like one caught below Limbanie). Group 36, in drier rockier area (where much oxychloa), held 1 A. jelskii, 1 P. pictus, 1 P. darwini, 1 Oryzomys. Drove back up to summit to look for caracara nest. Found old stick nest but none in use. Returned to House 2:30 p.m. Aside from specimens prepared, discarded one like 1147 (Oryzomys?), 204-86-24-17-34 gms., ♀, vag. per with tiny perforation, uterine horns slender & clear; this taken on slope in dark area under thick brush and granite boulder. Also discarded smaller one, like 1146, ♀, nip. $\approx < \frac{1}{2}$ mm., 139-60-19-14-22 gms., ~~taken near~~

July 19, 1951. Temps. - 4°, +11°C. Clear. Put up remaining mice. Set 20 traps around a stone corral 200 yds. SW of House on dry hill. Breeze up canyon in afternoon and into upper of cloud. Shot a 998 on ground at ^{S.} Ponds. 12:30, 2 of A. rolled on one side on bare spots on ground. another, ~~same~~ ^{Then} at 2:51. Rolled one side, stood; then ~~same~~ in usual manner, down on other side & gave 3 ^{or} rolls onto that side, then up & shake. 2:39, a smaller one of A. ran to near adult & was apparently spit at. All 5 walked ~~to~~ along slope 2 rolled briefly on short grass. One put neck & wrists to ground as if to sub-nest, then down on side, gave a roll, then up. Watched vicuñas in late afternoon.

July 20, 1951. Temps. - 3°, +11½°C. Clear. Shot, goose of 13 near House. ~~to~~ Traps (20) held 2 P. scaberrimus. Watched vicuñas 9:15-12, 2:50-5:30. Fair breeze up canyon. 1/10 cumulus in afternoon but clearing.

July 21, 1951. Temps. - 4½°, +10°C. Clear. Watched vicuñas 6 to 6:30, 7:30 to 12, 1 to 5 p.m. . 3/10 cloudy & fair


Journal

July 21, 1951

Aricoma, 15000', Dpto. Puno, Per U.

breeze up canyon by 1 p.m. Traps held 2 imm. P. sublimus, 21 gms., at base rock wall on short ^{-dry-} grassy knoll; back molting. Clear by sunset (5:03 at house).

July 22, 1951. Sunday. Temps. $-4\frac{1}{2}^{\circ}$, $+8^{\circ}$ C. Clear. Watched vicuñas 6-7 a.m., ^{8-9.} saw change in family group size. Saw hunter stalking vicuñas. 5 live traps held: P. pictus. The snap traps had nothing. Took up all traps. Saw condor 3x during day. Shot & put up a Circulodes & a Upucerchia (testes enlarged). About 1/10 clouds late afternoon.

July 23, 1951. Temps. $- ?^{\circ}$, $+8\frac{1}{2}^{\circ}$ C. Thermometer, usually in tunnel thru stone wall, was left on car hood & read -14° C. Perhaps former minima too low. Frostier than usual. Clear. Watched vicuñas 6-7 a.m. Saw fox rising along base stone wall 6:30 a.m. Passed 20' from me & saw me. Lift one hind foot over 8" high bush, sprinkle 2 sec., then on. Tail stiffly held  when fox moving along. Saw 2 ^{Attagis} ~~Attagis~~ pursued by hawk. At 9 a.m. left Hurt for Sandia. Saw 2 hawks (dark gray upper wings & chestnut back) leave stick nest on cliff 1/2 mile on Lake Arizona side summit (not caracaras). Supplied gas, mail at Cruces. ^{11300'} Cuyo - Cuyo a Cuyo sized town (a larger) in bottom canyon 14.7 miles from 14500' summit of road. Many stone-walled terraces - perhaps over 100 steps of them. 11.2 miles below CC passed thru 30 yd. long tunnel. & many terraces & accompanying huts on steep sides canyon on way down to Sandia. S. 36 miles below summit at 7500' in 1/4 mile wide bottom of very steep sided canyon. Road with many switchbacks & few turnouts but entirely possible.

Journal

July 23, 1951

To Sandia, Dpto. Puno, Peru

Drier than Limbani canyon but much ^{clear} water in bottom canyon; swift stream. Eucalyptus but no other trees at Sandia. Much brush up to 10' high. End of road. Many stores with good supply food, clothes, hardware. Only cars transient trucks. Steady stream llama & mule traffic both directions. People friendly & no military or police questioning. We camped about 1/2 mile above town on flat near river. Road tunnel, partly caved in, nearby; no bats in. Saw bats 5:30 to dark. Shot 1 Tadarida (♂ 1158); others (100+) apparently same, flying high over brush of river bottom. Set 20 traps near rocks & brush (rather dry) in dark.

July 24, 1951.

To Ariconia, 15000', Dpto. Puno, Peru.

Traps held 1 Oryzomys (♂ 1157). Humid night with frost & late sunrise because of high walls of canyon. Inquired at hotel, stores, & people for Mrs. Heller; they knew her from last trip but she had not arrived. Left note for her at hotel. Good pineapples for sale. Storekeeper Nuñez showed me spotted bear hide (small). We departed about 10 a.m. & drove up to summit. Shot 1 coot there (♂ 1161). First wounded one ~~on~~ ^{on} shore 60' from the ♂ (on water weed "nest" island). The ♂ then swam to shore & I shot it. Saw another near a nest island, accompanied by 3 small swimming young; another adult swimming near. Anas & teal & cormorants & gulls present; Onychoprion? along shores. 2 Theristicus about 1000' down on Cuyo-Cuyo side.

4.9 miles 'summit to Pato - Cuzco road. Back to Cuzco for gas. Home to Ariconia after dark. Shot 2 large Turdus between Sandia & Cuyo-Cuyo.

Journal

July 25, 1951

Aricoma, 15000', Dpto. Arequipa, Peru.

Put up specimens + wrote notes. Clear.

July 26, 1951. Min. temp. -5°C . Clear. Fair breeze down canyon in forenoon, up canyon at noon. Smoky haze, thickest down canyon. Watched vicuñas 6 to 9:30 a.m., 10-11 a.m., 12-3 p.m. Saw 5 condors at once in morning.

July 27, 1951. Min. temp. -5°C . No clouds but smoky haze. Breeze up canyon. Horsemen + dogs dispersed vicuñas in morning. Saw 2 ^{Mitchell's plover} ~~phalaropes~~ at edge rocky shallow ponds (black + white on heads, reddish brown rump). Groups A + B returned to usual territories in mid-afternoon. 4/10 cirrus overcast in late afternoon. 4°C . at sunset (5 p.m.). No traps out.

July 28, 1951. ~~At~~ Temps. -6° , $+10^{\circ}\text{C}$. since 10 a.m. yesterday. Many watched vicuñas, B groups, 6 to 7 a.m. No clouds. Light smoky haze. Breeze up canyon in forenoon + 5/10 thin cirrus clouds. Walked to Upper de la Mina + back. Shot 2 ^{Mitchell's plover} ~~phalaropes~~ where seen yesterday; put up, ♀ + ♂, gonads slightly enlarged.

July 29, 1951. Min. temp. -20 -2°C . last night. Wind in night, continuing in morning (fair wind down canyon). 5/10 thin cirrus clouds. Watched vicuña groups A + B, 6 to 11:30 a.m. Shot one *Apurcacia* + put up.

Forenoon wind died; breeze up canyon in afternoon. Less haze today.

July 30, 1951. Temps. -4° , $+11\frac{1}{2}^{\circ}\text{C}$. Watched nearby vicuñas 6 to 7 a.m. Clear. Drove to Limbaní + back. Shot 4 viscachas between 13000 + 14000' (1 specimen). Set 20 snap traps near stream, rocks, tall ^{grass} ~~grass~~, + occasional shrubs at 14000', 3.5 miles down road from Wat. Set 20 more traps among granite boulders + tall ^{dry} grass at 13750 ft., 4.5 miles down

Journal

July 30, 1951

Nr. A Limbani, Depto. Puno, Peru.

road from hut. Shot hummingbird, finch, + larger bird at 11600', 1 mile air line S. Limbani. At 13700', 4.7 miles from hut, crossed 15' wide clear creek. 13300', 6 miles from hut, to first large ¹¹⁰house near road.

July 31, 1951. Temps. -5° ; $+10\frac{1}{2}^{\circ}$ C. Many watched local vicuñas 6-7 a.m. Put up some specimens, then drove to traps at 14000' level. Catch 2 P. pictus (1 discarded, 1 in M.K. catalog ^{♂ 1056}). The 13750' trap line held 1 Chinchilla (M.K. ♀ 1055), 1 Neotomys (M.K. [♂] 1054). Set additional traps in lower line so 36 in all in thick grass + large (10') granite boulders. Shot 2 vicuñas. Returned to house + put up specimens.

August 1, 1951. Temps. -2° ; $+11^{\circ}$ C. Wind down canyon before dawn. Watched group B vicuñas 6-7 a.m. Drove to traps. Caught 1 P. pictus in 20 at 14000'. In 36 at 13800' caught 3 A. jelskii, 2 imm. A. boliviensis, 1 Neotomys, 1 Oryzomys! Highest last taken yet. Returned to house. Clear forenoon. Shot flicker at 14200', highest seen in Limbani Canyon. Put up specimens about 5/10 cumulus in afternoon + breeze up canyon.

August 2, 1951. Temps. $-3\frac{1}{2}^{\circ}$; $+12^{\circ}$ C. 3/10 cirrus + cirro-stratus.

Calm early morning. Watched local vicuñas 6 a.m. 6 p.m.

By 10:30 a.m., 5/10 cumulus + fair breeze up canyon. Solid overcast + light snow in afternoon.

August 3, 1951. Temps. $-1\frac{1}{2}^{\circ}$; $+11^{\circ}$ C. Light snow on ground enough to show tracks. Fog gone 8 a.m. + 5/10 alto-cumulus + alto-stratus. More fog + occasionally a few flakes snow on + off rest of day. Shot + put up 3 Lycalopex +

Journal

August 3, 1951.

Ariconia, 15000', Depto. Puno, Peru.

a Cinclodes. Clear night.

August 4, 1951. Temps. -6° , $+8^{\circ}$ C. Clear. Watched local vicuñas 6:10-6:45. Frost this morning. Departed for Cuzco 8:30 a.m. Near Cuzco shot 1 Caracara, 2 Lessonia, ^{2 fal (green winged)} & saw marsh hawks. Returning, shot Sparodyto & Chlorophaga near shore of Lake Ariconia. Saw 20± ducks in lower division of lake. Saw 4 flocks at once near outlet in morning. Buteo type hawk (chestnut back) nest 1.2 miles on Lake side of summit apparently unoccupied now. Old nest 50 yds. from newer looking one. Both halfway up 50' high solid rock cliff. Stick nests or niches in cliff face, ^{at about 14000', according to Cuzco, said flock} saw 1 turkey vulture near Cuzco. Saffort 16, ^{10± green parakeets.}

August 5, 1951. Temps. -7° , $+7^{\circ}$ C. since yesterday morning. Coldest night here so far but no frost. Dry, rel. humidity 20% at noon. Hygrometer reads 25%-50% at midday most days. Very clear morning. Put up specimens & wrote letters. New moon.

August 6, 1951 Temps. -8° , $+7^{\circ}$ C. since yesterday a.m. Rel. humidity 25% at 6 a.m. Watched group B vicuñas 6:20-7 a.m. Departed 8:15 a.m. for Juliaca. One coot near head of Lake Ariconia (rarely seen). About 300 ^{sheep} cattle on slopes near middle of lake, 100± alpacas near upper end, 10± cattle at outlet. Aug. 4 saw gull with ^{eggs} black head on small lake 1 mile below Ariconia on road. A caracara or newborn dead lamb on Lake A. shore. Shot a gallinule near Bosaris & saw 20± in all in several ponds. One kind of coot there as well as Anas & Querquedula (commonest). One Nycticorax & 6±

Journal

August 6, 1951

To Juliaca, Dpto. Puno, Peru.

coromants along Carabaya river. Just before Asillo a lake with 7 flamingos near shore. Another lake several miles beyond Asillo had ^{giant} coats on nest islands & with 2 or 3 young, a darker, smaller rook, black ruddy-like ducks, small grebes (white necks, black tops heads), 10± coromants, 3± night herons, & black (crown - forehead) & white headed ducks. Saw turkey vulture near Juliaca. Found Duffin has gone to Arequipa; stayed in their house.

August 7, 1951

Juliaca, Dpto. Puno.

Shopped & washed clothes. Clear, & warm at midday - said to already be warmer than July. Departed about 3 p.m.; & drove to near Rosario, & slept in car. At Juliaca met Joseph L. Haleski (Co. Wessel Duval & Co., Casilla 380, Lima), a mining equipment salesman who had returned from Santo Domingo mine a few days ago. He said that messengers could be relayed by phone from Limboni to the Santo Domingo. Andrés T. Dasso & Clarence Lee Woods were bosses at mine; both speak English. Haleski had walked 15± km. from end road to Ocanaque & ridden mule to S. O. next day. Of Siquitambo mine (near Sumbay & Inst.) he said there were many rocks & viciachas & that the manager, Olofe Westhoff, was hospitable. Another mine - Cailloma - about 20 km. distant; Joseph Schnatka mgr.

August 8, 1951

To Arequipa, 15000', Dpto. Puno.

Cold night & sweet ponds frozen over on Crucero pampas. Drove to Crucero & on to Arequipa. Saw coat (not breeding giant) near head of Lake Arequipa. Unloaded. Clear, sunny haze in afternoon. 10 m. away.
& Rested at camp. Temp. there at 10:30 a.m., -7° + 8° C. since

Journal

August 8, 1951

Aricoma, 15000', Dpto. Puno, Peru

at 10:30 a.m., relative humidity 17% (same yesterday 1 p.m., M.K.).

August 9, 1951. Temps. -5° ; $+10^{\circ}$ C. Clear. Breeze down canyon at sunrise. At Fox Lake saw 2 Anas, 3 grebes (black + white heads, gray body), 1 shoveller (dusky with pale cheek). Nearly one frog in clear cold & deep water. Shot a Leptasthenura.
Upsearched. 3/10 cumulus & alto stratus clouds by 4 p.m.

Shot one Anas in one of 5. Ponds.

August 10, 1951

To ^{Nr.} Limbani, 11500', Dpto. Puno.

Checked on local bands vicinias, then departed for Limbani. Camped 1 mile from town at 11600'. Set 41 traps on west slope of canyon among rocks & brush, green damp area. Set 34 traps on E. side canyon near grass & stone walls, little brush. Before dark west side traps took 1 P. pectorus, 2 akodon (small), 1 A. jelskii. One Neotoma by 7 p.m. Shot 1 blue-black hummingbird. Smoky haze. Cool damp evening.

August 11, 1951

Nr. Limbani & Aricoma, Dpto. Puno.

Picked up traps 9-11 a.m. Western line held (small akodon). Eastern line held 2 Phyllotis darwini?, 1 P. pectorus, 1 small akodon. Took & shot 1 hummingbird, 2 tit-like tyrants, 1 other flycatcher, 1 short tailed streaked breast babbler(?). Returned to Aricoma ~~cassero~~ at noon. At Limbani saw Zonotrichia coronata, gas-dark gray breasted Phrygilus, Caracara, large Turdus ^{Canilade}, & other birds.

August 12, 1951

Aricoma, 15000', Dpto. Puno

Min. temp. $-5\frac{1}{2}^{\circ}$ C. Clear, dry (22% at 8 a.m.). Put up specimens.

August 13, 1951. Watched vicinias 6 a.m. to 5 p.m. Temps.

Journal

August 13, 1951

Aricoma, 15000', Depto. Puno, Peru.

$-5\frac{1}{2}^{\circ}$; $+9\frac{1}{2}^{\circ}$ C. Clear; fair wind up canyon. Saw 2 huemuls & a condor. Rel. humidity $< 20\%$ in forenoon.

August 14, 1951. Temps. -8° ; $+9\frac{1}{2}^{\circ}$ C. Clear, dry. Rel. humid. $< 20\%$ $17\frac{1}{2}\%$ at 9 a.m. Set 55 traps on E.

+ NE-facing slopes $\frac{1}{2}$ mile NW of Fox Lake, near rocks, clumps grass, bushes, Pycnophyllum. Many viscacha in that area. Shot 2 ducks on Fox Lake. Very much smoky haze in afternoon. ^{Humidity 85% at 6 p.m.} Moon about 2 days before full.

August 15, 1951. Temps. -6° ; $+10\frac{1}{2}^{\circ}$ C. Clear. The 55 traps held 1 ♂ A. jelskii, 6 Phyllotis darwini (4 ♀♀, 2 ♂♂).

Returned to house. 11 a.m. On Fox Lake, two small black crowned grebes building 1' wide water weed (brown) island 20' from shore near lake inlet. One prostrated itself at edge island & other stepped on. Then they faced each other in water & shook heads side to side. Shot finch, perhaps 1 of flock 10+. Put up specimens. Smoky haze in afternoon.

August 16, 1951. Temps. $-4\frac{1}{2}^{\circ}$; $+10\frac{1}{2}^{\circ}$ C. 6/10 cirro-stratus clouds 9 a.m. Traps held 2 Phyllotis darwini?, 5 A. jelskii. Put up 1 of each. Shot & put up 2 Thomomys?, 1 Ceriodon?. Llamas & sheep & 3 or more people moved into our area, the people housing in Rock Shelter. One of the men said there were pumas in this area. Mary ill with headache but recovering. Full moon.

August 17, 1951 Temp. -4° ; $+11^{\circ}$ C. 50% rel. hum. 8 a.m. Dogs of Indians destroyed 15± of specimen skulls & skeletons. Traps held nothing. Yesterday, on dry rocky hillside of

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August 17, 1951

Aricoma, 15000', Dpto. Puno, Peru.

trap line, flushed a caprimulgid, brown with white bars on wings. Fair wind up canyon today. Saw 2 pairs Anas + 6 small gray grebes (black line dorsal neck, black ^{dorsal} upper half head)

August 18, 1951 Temps. -2° ; $+11\frac{1}{2}^{\circ}$ C. Fair wind down canyon early in night + continuing in morning. Saw 5 grebes, 1 pair sheldons (or blue bill, red-cinnamon sides), 1 pair Anas. Traps held 2 A. jelskii, 1 Nestor sp. Took up there 60 traps. Two traps set near boulder + Senecio lush on grazed slope near house held 2 P. sublimis. Shot one [♀] grebe on Fox Lake. Very clear day. Sheep, llamas, + alpacas remained near house + on lower Long Mdw. Shot a Dreco + Condalia?. Fog in late afternoon.

August 19, 1951. Temps. -3° ; $+9^{\circ}$ C. Rel. humid. 14% at 7 a.m. - lowest yet observed here - but 85% at 4 p.m. when 5/10 low clouds (came up canyon). Wind last night continuing all day. Went to Cuervo for mail + supplies + returned at noon. Shot 2 Attagis. ~~Prepared~~ Prepared bird skeletons.

August 20, 1951. Temps. -3° ; $+10^{\circ}$ C. Wind up canyon in morning. At 11 a.m. departed camp and drove to Cuervo junction, ^{8 mi.} then to Sandia junction, ^{26.0 mi.} to Pato junction, ^{41 mi.} to Putina, ^{76 mi.} to Calacala turnoff (14.9 beyond Putina junction), + to Finca Calacala, arriving about 7:30 p.m. By noon half overcast. all overcast + occasional snowflakes near Pato but out from under storm at Putina. Saw about 3 Sprentys between Cuervo + Pato, + many Basilla (commonest bird). Summit beyond

Journal

August 20, 1951

To Calacala, nr. Putina, 13000', Dpto. Puno.


Pato 15430' (15200 at Hume; pressure low today). Road had been worked on & much improved between Pato & Putina. About 10 acres of trees up to 15' high about 10 miles before Putina & several other areas smaller trees (reddish bark; Polylexis?). At Calacala told no measles seen there recently, but Sr. Salazar said recently saw 2 near Chupa (near Arapa) and a boy had killed one. Saw a poor-will, red eye shine, on road nr. Hume.

August 21, 1951

Finca Calacala, nr. Putina, 13000', Dpto. Puno.

at 7 a. m. about 1" snow on ground and snowing lightly & steadily. Snowed all day, about 4" by sunset. Shot a flycatcher & Zonotrichia (flocks 20+) in yard & put them up. Flushed poorwill near house.

August 22, 1951 Snow ceased in forenoon, about 10" deep. Took some pictures. Shot & put up 3 birds from near buildings.

August 23, 1951. Clear. Hunted tinamous on partly snow covered ground & killed one. On rock ridge 1 1/2 miles SW of house saw 3 foxes about noon, & a few viscachas. Flushed poor will from nest on bare ground on rocky slope. Two fuzzy young in nest & eggshells (white, pale pink) nearby. Clear all day but fair breeze. On many slopes snow still not melted. Shot a gray headed orange-yellow breasted large finch in yard. It was fighting headlight of car at times. Sr. Parker said see here. A sparrow hawk shot in yard had testes , other smaller.


August 24, 1951. Clear. 6:30-8 a. m. hunted on grassy hillside 1/2 mile W. of house & killed two tinamous, ♂ & ♀. Made skeletons of these. In afternoon went to

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August 24, 1951. Dpto. Puno, Perú
Hcda. Calacala, nr. Putina, 13000',
poornill nest, shot adult, + brought back 2 nestlings
(11+17 gms.). Adult flushed at 30'. Nestlings were out
of nest site 2', in sunshine. In evening nestlings chirped
in sack. Set 12 traps in grass near stream + rock wall.

August 25, 1951. Nestlings cold to touch but squirmed when
warmed up. Hunted for ~~per~~ codornices for 1 hour, 6:30-7:30
a.m., + shot 2 young (~~a~~ perdiz?) flushed separately from
tall dry grass on gentle slopes. Clear today. One Phyllotis
in traps. Large fresh droppings  present in passages
in grass (guinea pigs?). The Phyllotis had pale gray belly,
brownish back - 230-119, 36 gms, vulva perf., uterine
horn 25x1, nipples not elongated. About 2 p.m. went to
N along hillside, flushed 4 or 5 tinamous, shot a codor-
niz (skin) and perdiz (♀, 215 gms., largest ovum 1 1/2 mm.)
at same location (tall grass, steep hillside, some old
cultivated parts). Saw 1 turkey vulture during day.

August 26, 1951 To Aricoma, 15000', Dpto. Puno, Perú.
8 7/10 alto camulus. At 7 a.m. departed from Calacala.
3 miles from house saw 2 teal (green winged) with 3
small downy young on small river. Putina road 12.4
miles from house. Putina 14.8 miles up the road.
We took road to Ayangara but missed turn about
5 miles out of town (we took better road). 8.5
miles from Putina passed lake with caats nesting
+ many ducks. 17.1 miles from P. ~~craspedys~~ ^(Muhaji) sum-
mit. Saw past well built hacienda buildings
and wire-fenced (!) pasture. Sheep mainly; some

Journal

August 26, 1951

To Aricoma, 15000', Dpto. Puno, Peru.

alpacas. (Incidentally, many newborn lambs in this season. Paredes lost about 100 of his 8000 sheep in recent snowstorm, mostly lambs.) 26.8 mi. from P. passed another high point, but all of this area high with short grass rolling pastures & still much snow on ground (14000±'?). 35.6 miles from P. arrived at road end - Heda. ^{Picotani} ~~Arizsoni~~ (or similar sounding name). Formerly road from there to Crucero but bridge now gone. We had to go back to about 5 miles from Putina. In all this 'side trips' cost us about 5 hours time. Saw 3 *Lando vicini* as near the hacienda. Arrived back at fork 1:45 p.m. & drove toward Ayangaro on rough dirt road - no steep places or considerable hills. 4.3 miles from fork a large lake with many gallinules, ibis, geese. 16.1 mi. from fork a lake about 1 mile long with coots, ducks. 37.6 miles from fork met road from Toraco at bridge at Ayangaro. Bought gas. Asillo junction 17.7 miles from Ay., & trailer 85 miles beyond. Stopped for mail in Crucero. Arrived trailer 9:45 p.m. Still 4" snow on ground in trailer area & only with difficulty reached trailer over the crusty snow. The Andean with garudo had gone. A few miles before Rosario saw a caprimulgid on road and a fox in same area.

Aricoma, 15000', Dpto. Puno

August 27, 1951. Monday. Rested from trip. Burned

Journal

August 27, 1951

Aricoma, 15000', Dpto. Puno, Peru.

of stock (100±) near House in morning. $\frac{5}{10}$ to $\frac{9}{10}$ overcast all day. Max. temp. 10°C . today. Ground in ~~arid~~ area of camp 50% to 100% snow covered, covering least on slopes toward sun. Saw one falcon.

August 28, 1951. Min. temp. -4°C . last night. 7 a.m., $\frac{9}{10}$ cirro

and alto-stratus. Later all stratus & remained rest of day.

Fog about 5 p.m. Max. temp. during day 9°C . Stock in SE Canyon & near House during day. Watched 2 groups vicuñas 8 to 12 m. Set 43 traps near cliffs, rocks, & grass in comparatively damp area near bottom of SE Canyon.

August 29, 1951. Min. temp. -3°C . last night. at 7 a.m.,

$\frac{9}{10}$ mod.-thick cirro-stratus overcast. Lowered to stratus about noon. Traps held 4 A. jelskii, 1 P. sublimis.

Set more traps in grass & near rocks, 1 to $1\frac{1}{2}$ miles S. of House, so 68 ~~alt~~ total. Saw 2 condors. Saw a fox.

Buteo-like hawk squaled at me near cliffs as if nest there. Returned to House 1 p.m. & prepared specimens. Fog about 4:30 p.m. A green-winged teal I shot

Aug. 26 at Calacala, ~~about 12500'~~ had testes 35×20 !

Sheep & llamas still in SE Canyon. Max. temp. $10\frac{1}{2}^{\circ}\text{C}$.

August 30, 1951. Min. temp. last night -3°C . Cirrus clouds in early morning. $\frac{1}{10}$ cumulus & fair breeze up canyon at noon.

Stock in SE Canyon. Traps held 4 P. darwini (discarded).

Shot a large Buteo-like hawk and a Muscisapicala. Returned to House & prepared specimens. Temp. max. $+8^{\circ}\text{C}$.

August 31, 1951. Temp. min. -5°C . Alto-cumulus clouds

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August 31, 1951

Aricoma, 15000', Depto. Puno, Peru

9/10 at 8 a.m. Clearing at noon but 5/10 cumulus by 2 p.m., clouds later. Fog about 5 p.m. Max. temp. $+8\frac{1}{2}^{\circ}\text{C}$. Fair wind up canyon in afternoon. The 68 traps held 1 P. darwini, 2 A. jelskii, 1 Neotoma, 1 Logisium, 1 Peromyscus. Put up Peromyscus & Neotoma & discarded others. Picked up all but 16 traps. Watched vicuñas 3:20-5 p.m. Stock near house in afternoon.

September 1, 1951. Saturday. At 7 a.m. 8/10 cirrus + cirro-stratus overcast, calm. Temp. min. $-4\frac{1}{2}^{\circ}\text{C}$. Still some snow on S. slopes. The storm replenished water in many dried up ponds. Watched local vicuñas 7-9 a.m. when livestock invaded area. Took up remaining traps; catch, 2 Neotomas. Max. temp. 9°C . Fair wind up canyon in afternoon. Watched vicuñas on lawn in late afternoon.

September 2, 1951. Sunday. Min. temp. $-4\frac{1}{2}^{\circ}\text{C}$. 5/10 overcast in morning, increasing midday, decreasing in late afternoon; cumulus. Fair wind up canyon. Drove to Crucero for mail & supplies & returned about noon. Shot hawk (1245) below Lake Aricoma, on ground, & a swallow along road near camp. Put up specimens. Temp. max. $+9^{\circ}\text{C}$.

September 3, 1951. First clear day in past week. Fair breeze from NW at 7 a.m. Min. temp. -4°C . last night. About 5/10 cumulus at noon, 9/10 at 4 p.m. & fog ^{coming} up canyon after 4 p.m. Watched vicuñas 7-12, 1:30-4:30. Max. temp. 14°C .

September 4, 1951. Min. temp. -5°C . Clear, calm, at 7 a.m. Light frost. Watched vicuñas 8 to 11 a.m. Walked to the Lake & back in afternoon. Livestock still in area. Clouded up during day & fair wind up canyon. Max. temp. 16°C .

September 5, 1951. Min. temp. -2°C . Drove to Limbani, then on down to tunnel at end of road, 8000 ft. Overcast

Journal

September 5, 1951. To nr. Limboni, Dpto. Puno, Peru
at & below Limboni, & occasional light sprinkle. Set 50 snap,
Schuyler, & (2) steel traps on west bank river (8 above road).

Saw a condor. Camped on river bank. Saw no bats.

September 6, 1951. Last evening found ^{To Aricoma, 15000', Dpto. Puno, Peru} Oryzomys + 1 Akodon
in traps by 8:30 p.m. This morning found 4 gray marsup
ials. Returned to Aricoma & put up specimens. Discarded
3 imm. Oryzomys. Overcast Clear last night but clouding
up by 9 a.m., light sprinkle (occasional snowflakes)
at Aricoma camp. Stock still there.

September 7, 1951.

Aricoma, 15000' Dpto. Puno, Peru

Clear overhead, clouds down canyon, at 6 a.m. Snow just covered
ground. By 7 a.m. ^{clouds} fog reaching camp as fog. Later clouds rose &
8/10 to all overcast. Watched vicuñas 2 hrs. in morning. Set 43
traps (1 steel) near rocks on grazed gentle slopes & near rocks;
grass, brush, on S. slopes of S. Hill, ^{shot 2 ducks.} Saw 1 condor, 15 geese.

September 8, 1951. Temp. min. -5°C . Traps held Dussumyia &
(kept skull only), 2 P. darwini, 2 A. jelskii (put up 1 P. d., discarded
others). Clear in ^{early} morning but clouding up in afternoon. Visited
traps in afternoon & set 7 additional + 4 live traps. Took
1 lizard caught in snap traps (saved both). Max. temp. $+14^{\circ}\text{C}$.

September 9, 1951. Temp. min. -4°C . Clear in early morning,
clouding up at midday. Traps held 1 Punomys, 1 A. jelskii, both in
live traps, + 1 fox. Kept Punomys for pet. Fused A. jelskii. Kept
skull fox. Departed 8 a.m. & drove to Cuzco for mail & exp-
plies & returned to Hance 1 p.m. ^{Max. temp. $14\frac{1}{2}^{\circ}\text{C}$.} Examined fox. Camped.

September 10, 1951. Temp. min. $-2\frac{1}{2}^{\circ}\text{C}$ last night. Clear early morning.
Y10 remember by 8 a.m. Traps held 1 P. darwini. Punomys died,

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September 10, 1951

Ariconia, 15000', Depto. Puno, Peru

food not eaten; wrong kind Senecio? Watched vicuñas near Ice Lake 9-10:30 a.m. $\frac{9}{10}$ overcast by 11 a.m. + rest of day. Occasional snow-flakes + patches fog. Picked up most of traps + set others so that 32 total out (4 live, no steel). Max. temp. $+14^{\circ}\text{C}$. Half moon; overcast evening.

September 11, 1951. Min. temp. -1°C . last night. Half overcast 6 a.m.,

all 7 a.m. (cumulo stratus). Flocks of several black + yellow spinners not uncommon. About 20 horses in S. Pasture today. Breaker in clouds by 9 a.m. + fair breeze up canyon. Max. temp. $+14^{\circ}\text{C}$.

Watched vicuñas near Ice Lake 7-12. Traps held 2 A. pilchii.

Sheep near House during day. Set 20 ^{additional} traps near stone corral + rocks near House; 52 total.

September 12, 1951. Min. temp. -1°C . Traps held 1 Nestomys (m.k. catalog)

Light rain + snow in night + high stratus overcast in morning, + occasional snow flurries. Watched vicuñas near Ice Lake 9:30-11:30 a.m.; returned to house. Set 6 more snap traps at base of a

stone corral near house (for P. pictus) - one had a pictus ♂ 3 hrs. later.

Another pictus by 5 p.m. Rain + snow, light, increasing in late afternoon. Max. temp. 14°C . (before noon). ^{Traps which took pictus} had been rebaited, etc. + com.

September 13, 1951. Min. temp. -1°C . Trace of snow on ground.

High stratus overcast 6 a.m. - remained cloudy $\frac{9}{10}$ to $\frac{10}{10}$.

Traps held 1 P. pictus ♂ (m.k. catalog). Watched vicuñas

near Ice Lake 8-9 a.m. Rebaited some snap traps. Took up traps

near House. Drizzle + wet snow in afternoon. Max. temp. $+9^{\circ}\text{C}$.

September 14, 1951. About 4" new snow on ground in morning

+ high gray overcast. Min. temp. -1°C . last night.

Traps held nothing (took up 4 - about 20 out including ing sand + Sherman). Watched vicuñas near Ice Lake 9 to

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Peru

September 14, 1951

Aricoma, 15000', Depto. Puno,

10:30 a.m. Returned to House. Mary ~~is~~ ill today. Snow
 max. temp. $+8\frac{1}{2}^{\circ}\text{C}$.
 & rain & overcast in afternoon; rain ceased about 3:30.

September 15, 1951. Min. temp. -2°C . $\frac{1}{10}$ cumulus & cirro-
 cumulus at 7 a.m. $\frac{3}{10}$ cumulus by 11 a.m. Saw 3 condors. Shot
 2 teal on W. Ice Mdw. (15500'±). Flushed 2 pairs ^{attagis} ~~tinamous~~ on W. Ice
 Mdw. In afternoon shot a coot (♂, 1400 gms., testes
 11x5, slight fat - tract saved), a shoveller (spec. cat.),
 two Anas. The teal were ♂, 425 gms., mod. fat,
 testes 21x10 (saved); and ♀, 400 gms., mod. fat,
 largest ovum 4 mm. Put up Spatula, & Fulica for skeleton;
 ate others (saved gonads teal & Anas). No rain or snow today but
 heavy overcast in afternoon. Max. temp. 13°C . Moon full a
 day past. Saw a ♀ & ♂ Lessonia by Pond today.

September 16, 1951. Min. temp. -4°C . At 10 a.m., $\frac{3}{10}$ cumulus
 clouds. Drove alone via Crucero toward Fulcra. About
 halfway to the down hill from Aricoma to Crucero saw about
 10 parakeets. Marsh Hawk near Crucero, & burrowing owl.
 Ponds near Pucaris had yellow legs, glossy ibis, gallinules,
Anas, Nycticorax (50±). Stopped at Palmera and talked
 with Jesus Orellana, quinero of manganese mine 33
 km. up the hills. Roberto Dammert, a German, was the
 other half of the group but was not present. Orellana said
 there were deer & huancos on road to their mine (33
 km. to N) and he showed me skin of huancos he
 had shot next to road. He said 6 or 7 were present &
 all go tame as llamas. He said they did not mix
 with the llamas. No tinamous in that area according

Journal

September 16, 1951.

To nr. Juliaca, Depto. Puno, Peru

to Orellana. I had coffee with O., then drove on toward Juliaca. Many coats on weed islands on lake beyond Asello, & many of the black & white headed ducks. Camp-
ed on pampa near Juliaca. ^{Saw 10+ flamingos on lake before Asello.} Juliaca, Peru

September 17, 1951. Night frosty & clear. Drove to Juliaca. Got car repaired & shopped. Stayed at Clinica Americana with Duffies. Wrote letters.

September 18, 1951. With Duffies visited Siculstani (sp?) a large lake about 45 minutes drive from Juliaca (toward Puno, then turn right). Inca "chulpas" (burial towers of stone about 25' high) there. Saw at least 2 kinds grebes on lakes, teal, cinclodes, blackbirds (yellow at head wing), & small birds among reeds. Other fringillids seen but not identified. Open grazed country with Polylexis shrubs on slopes. Large island in larger lake - said to have many vicuñas. Lake 2 miles across, island 1/4 mile (estimated) & flat topped (good for trapping?). Returned to Juliaca. Mailed skeletons 1219 + 1227 (Attagis + Nothoprocta sp.) to MVZ; also round & tape worms from Ducicyon, & some ^(2?) Nothoprocta gonads & abd. skin samples. Clear here too but clouds across lake to ^{Titicaca.} Strong wind in afternoon. Stayed at Juliaca. Visited Sr. Santellana 113 Dos de Mayo, who was wealthy wool man & leading town sportsman. He had mounted two torrent ducks (from Mr. Santa Lucia), stilts, & a few other birds. Had at least 9 guns, reloading equipment,

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September 18, 1951

Julia, Dpto. Puno.

and much ammunition. Said good codorniz + perdiz hunting nearby + offered to take me there. Said had seen weasels + "siete colores" (flycatcher) at Siculstani. Had 3 hunting dogs, one a pointer. Said had seen chinchillas at Heda. Huancané (near Sta. Lucia). Told me of a large toucan-like bird, much larger than codorniz, found only ^{at} highest places (Bra. Paredes too, + some name - quilque? - but description sounded like seed snipe).

September 19, 1951. Departed 7:30 a.m. for Areconia.

Total trip to camp 150 miles. 40 miles to Pucará, 15 to Ayaviri fork, 10 to Asillo, thence 42 to Rosario, 18 more to Cuervo (120 from Julia), 15 to fork, 10 to ft. Lake Areconia, 10 to camp. Saw 50± teal on lake ponds several miles beyond Asillo, about 100 geese on wet flat ^{shady} before Asillo. The ponds near Rosario with gallinules, ibis, yellow legs, as usual. Shot 2 of Syrnoides at roadbank 3 miles before Rosario, a pair of geese 5 miles before Julia, + white breasted hawk (same as #1245) at Lake Areconia. Light hail over Cuervo plain + fog in Lumbani valley. Mary reported clear most of day since my departure, least temperature - 5½ °C.

September 20, 1951,

Areconia, 15000', Dpto. Puno

Min. temp. - 5½ °C. last night. Prepared specimens. set 25± traps in SE Canyon on slope in grass,

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September 20, 1951. Aricoma, 15000', Dpto. Puno
 rocks, + Deneio (Peromyscus sign present). Clear in
 morning, overcast in afternoon with a few snow-
 flakes. Sheep, alpacas, + llamas near House during
 midday. Max. temp. +13°C. Set 6 traps near rock wall on Pak Hill.

September 21, 1951. Min. temp. -6°C. Clear + calm 7 a.m. Two Phyllotis
pectus in 6 traps near House, 2 P. pectus + 1 A. jelskii in 20 traps
 in SE Canyon. Stock in SE Canyon today, + 20+ hares in S. Past-
 ure. 3/10 cumulus + fair breeze up canyon by 11 a.m., up to 8/10
 cumulus in mid afternoon. Max. temp. +15°C. Set
 30+ traps on slopes near Ice Indur. near cliffs, rocky
 + especially tall grass. Sunset on peaks after 5:30 p.m.

September 22, 1951. Min. temp. -5½°C. Clear + calm 7 a.m.
 Traps (20) in SE Canyon held 2 P. pectus, 1 Chinchillula ♂. Other
 traps held 0. Set 15 additional traps. Peromyscus ♂ in
 trap in afternoon (M.K. 1061). About 4/10 cloudy in early
 afternoon - clearest recent day. Max. temp. 15°C., but
 found sun has been reaching thermometer (moved it).

September 23, 1951. Min. temp. -4½°C. Traps
 in SE Canyon held 1 P. pectus, 1 A. jelskii, others none.
 about 55 traps set in all. With family hiked to w.
 Ice Indur. + back to House in morning. Clear at 6 a.m.
 but all stratus overcast by early afternoon + sunset
 4:55 p.m. Nearly clear by dark. ~~Light~~ Light snowfall for
 one hour in early afternoon. Max. temp. 12½°C. (shade).

September 24, 1951. Min. temp. -3°C. 10 traps set on
 SE end S. Hill by Mary yesterday held 3 P. danielis (2 ♂♂, 1 ♀).
 Seven traps I had set between House + bottom SE Canyon held

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September 24, 1951

Aricoma, 15000; Depto. Puno Peru

1 Chinchillula ♀, 2 A. jelskii. 30± traps in SE Canyon held 0. One of 4 set for P. sublimis near house held 1 imm. ♂. A hunter gave me head of vicuña ♂ (1272). I took up all my traps.

September 25, 1951. Min. temp. - 2°C. 1/10 - 2/10

cloudy to NE all day, + fair wind. Put up birds. Set ¹⁵⁺~~20~~ traps near Ice Falls hoping to catch Neotomys. Set 10 traps in P. sublimis coral 200 yds. SW of house. Dicae speculifera, Cinclodes, Thriocorus, + Muscisarcicola flaviventris, abulifrons, + cincera, remain commonest birds seen on rocks + ground. Spizella atrata, Phrygilus ^{Thriocorus common, in flocks.} unicolor + plebejus, less common. These common. Max. temp. 12°C. but felt hot out of wind.

September 26, 1951. Min. temp. - 2°C. Wind in night continuing in morning. Clear. 1/10 cloudy by 11 a.m. 11 sublimis traps held 3 (2 ♂♂, 1 ♀). M.K. put up one ♂; ♂ + ♀ discarded. Other traps held nothing. I put out 11 snaptraps in runways in thick grass at edge Ice Flat (took up 6 there) where large greenish droppings abundant ○ (Neotomys?). Returned to house. Watched local vicuñas 11-12, 1-5 (group A + 15 ♂♂). About 3/10 cloudy at noon, all overcast 4 p.m. Max. temp. + 13°C.

September 27, 1951. Min. temp. - 3°C. Clear, calm. sublimis traps held 0; taken up. Traps at Ice Flat held 1 A. jelskii. Set 5 more traps there on flat in thick grass. Drove down Limberni road to 13800' + set 50± traps among boulders + tall grass in area where had set on previous occasion. One Akodon boliviensis in traps before I left at 5 p.m. Max. temp. + 13°C; gradually clouded up during day.

Handwritten scribbles and marks in the bottom right corner, possibly including the letters "L" and "H".

1. The first part of the paper is devoted to a discussion of the general principles of the theory of the structure of the atom. It is shown that the structure of the atom is determined by the laws of quantum mechanics, and that the structure of the atom is not determined by the laws of classical mechanics.



